3.2.3 AIR QUALITY

Section 3.2.3, Air Quality, of the DEIS provides a discussion of the Federal Clean Air Act (CAA) and the National Ambient Air Quality Standards (NAAQS) established under this Act. A discussion on screening techniques used to evaluate the effects of projects on air quality, and the criteria pollutants for such screening, is also provided. Please refer to this section of the DEIS for more information.

3.2.3.1 Affected Environment

Jackson County, the proposed dam and reservoir sites, and the proposed routes of the raw water transmission main from each of those sites are classified as being in attainment. In addition, Wood Creek Lake in Laurel County, Lock 14 of the Kentucky River in Lee County, and the proposed routes of the water transmission pipelines from each of these resources are in areas classified as being in attainment (KDEP, Webpage).

3.2.3.2 Environmental Consequences

No changes have been made to the list of potential impacts on air quality resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.3.2, Environmental Consequences, of the DEIS for this list.

As discussed in Section 3.2.3.2, Environmental Consequences, of the DEIS, the types of equipment and hours of use anticipated to be necessary for construction were used to determine pollutant emission levels for each of the alternatives investigated in the DEIS. Table 3.2.3-1, Planned Construction Equipment and Air Emissions, in the DEIS provides the necessary information for this analysis. The same types of equipment would be used for construction of the additional alternatives investigated in this FEIS, although at different quantities and durations of use. The exact quantities and durations of equipment use for the additional alternatives investigated in this FEIS are unknown. Therefore, the discussion of impacts on air quality resulting from the additional alternatives investigated in this FEIS, presented in Sections 3.2.3.2.6 through 3.2.3.2.9 of this FEIS, involves a qualitative comparison, based on the size of the construction project and subsequent assumptions about equipment use, to the impacts of the alternatives investigated in the DEIS.

3.2.3.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.3.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the impacts of this alternative on air quality.

3.2.3.2.2 Sturgeon Creek, 8.5 mgd

No changes to this section have been made for the FEIS. Refer to Section 3.2.3.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the impacts of this alternative on air quality.

3.2.3.2.3 Sturgeon Creek, 3.5 mgd

No changes to this section have been made for the FEIS. Refer to Section 3.2.3.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the impacts of this alternative on air quality.

3.2.3.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.3.2.4, No Action, of the DEIS for a discussion of the impacts of this alternative on air quality.

3.2.3.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.3.2.5, Summary of Impacts, and Table 3.2.3-5, Summary of Impacts on Air Quality, of the DEIS.

3.2.3.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

Based on an estimated RCC fill volume of 41,000 cubic yards (cu. yd.), an estimated volume of 3,100 cu. yd. of conventional concrete, and an estimated volume of 1,800 cu. yd. of concrete for the upstream and spillway pre-cast panels for the dam at the War Fork and Steer Fork, 1.3 mgd site (Kenvirons, 2000b), the approximate number of truckloads of each raw material that would be needed for the dam are: 450 truckloads of cement; 1,030 truckloads of sand; and 2,230 truckloads of gravel. The War Fork and Steer Fork, 1.3 mgd site would be accessed using Turkey Foot Road and a new road adjacent to War Fork (Kenvirons, 1999c). The new access road would require an additional 3 to 5 acres to be disturbed for construction, and would be approximately 3,500 feet, or about 0.7 miles, in length (Kenvirons, 2000b). This road may later be used for permanent access to the dam.

Since the size of the dam at the War Fork and Steer Fork, 1.3 mgd site would be smaller than the dam at the War Fork and Steer Fork, 3.5 mgd site, discussed in Section 3.2.3.2.1, War Fork and Steer Fork, of the DEIS, the duration of construction would be shorter, and the hours of equipment use would be less. As discussed in Section 3.2.3.2.1 and in Table 3.2.3-3, War Fork and Steer Fork Construction Emissions, of the DEIS, none of the criteria pollutants for the screening of the War Fork and Steer Fork, 3.5 mgd alternative would have emissions that would exceed 100 tons for the entire construction period, much less for a single year. In comparison, emissions resulting from the War Fork and Steer Fork, 1.3 mgd alternative would be smaller than those listed in Table 3.2.3-3. Therefore, a conformity determination would not be required with this plan in accordance with the CAA. Impacts on air quality would be adverse, but less than significant.

Fugitive dust impacts, and impacts resulting from the burning of debris or an accidental hazardous material or POL (Petroleum, Oil, or Lubricant) spill would be the same as those discussed in Section 3.2.3.2.1, War Fork and Steer Fork, of the DEIS.

The operation of the dam would require only minimal mechanization of spillways, the intake structure, and pump house. The impacts of these operations on the air quality of the area would be insignificant. Utilization of the reservoir for recreational purposes could potentially increase traffic into and out of Jackson County, but not to the degree that would jeopardize the attainment status of the area.

Raw Water Transmission Main

The area that would be affected by the construction of a raw water transmission main from the proposed reservoir at the War Fork and Steer Fork, 1.3 mgd site lies mostly within the Kentucky Department of Transportation (KDOT) or County road rights-of-way (ROW). ROW would need to be obtained in the form of a Special Use Permit for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners. Approximately 47,000 linear feet, or about 8.9 miles, of water transmission line would have to be laid (Kenvirons, 2000b).

The amount of activity and equipment use for the construction of the transmission main from the War Fork and Steer Fork, 3.5 mgd site was factored into the equipment use and total emissions depicted in Table 3.2.3-2, War Fork and Steer Fork Construction Emissions, of the DEIS for the War Fork and Steer Fork, 3.5 mgd alternative. Since the transmission main leading from the War Fork and Steer Fork, 1.3 mgd reservoir would have a smaller diameter than that from the War Fork and Steer Fork, 3.5 mgd site (12 inches verses 18 inches), less excavation may be necessary for laying the pipeline. However, the length of the pipeline would be the same. For the purposes of this analysis, the level of emissions resulting from construction of the raw water transmission main from the War Fork and Steer Fork, 1.3 mgd reservoir is assumed to be less than or equal to the level generated during construction of the main leading from the War Fork and Steer Fork, 3.5 mgd reservoir discussed in the DEIS. Therefore, the impacts on air quality resulting from this alternative would be adverse, but less than significant.

The operation of the raw water transmission main would require only minimal mechanization. The impacts of these operations on the air quality of the area would be insignificant.

3.2.3.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

Based on an estimated RCC fill volume of 61,000 cu. yd., an estimated volume of 4,600 cu. yd. of conventional concrete, and an estimated volume of 2,330 cu. yd. of concrete for the upstream and spillway pre-cast panels for the dam at the War Fork and Steer Fork, 2.2 mgd site (Kenvirons, 2000b), the approximate number of truckloads of each raw material that would be needed for the dam are: 660 truckloads of cement; 1,510 truckloads of sand; and 3,270 truckloads of gravel. The War Fork and Steer Fork, 2.2 mgd site would be accessed using Turkey Foot Road and a new road adjacent to War Fork (Kenvirons, 1999c). The new access road would require an additional 3 to 5 acres to be disturbed for construction, and would be

approximately 3,500 feet, or about 0.7 miles, in length (Kenvirons, 2000b). This road may later be used for permanent access to the dam.

Since the size of the dam at the War Fork and Steer Fork, 2.2 mgd site would be smaller than the dam at the War Fork and Steer Fork, 3.5 mgd site, discussed in Section 3.2.3.2.1, War Fork and Steer Fork, of the DEIS, the duration of construction would be shorter, and the hours of equipment use would be less. As discussed in Section 3.2.3.2.1 and in Table 3.2.3-3, War Fork and Steer Fork Construction Emissions, of the DEIS, none of the criteria pollutants for the screening of the War Fork and Steer Fork, 3.5 mgd alternative would have emissions that would exceed 100 tons for the entire construction period, much less for a single year. In comparison, emissions resulting from the War Fork and Steer Fork, 2.2 mgd alternative would be smaller than those listed in Table 3.2.3-3. Therefore, a conformity determination would not be required with this plan in accordance with the CAA. Impacts on air quality would be adverse, but less than significant.

Fugitive dust impacts, and impacts resulting from the burning of debris or an accidental hazardous material or POL (Petroleum, Oil, or Lubricant) spill would be the same as those discussed in Section 3.2.3.2.1, War Fork and Steer Fork, of the DEIS.

The operation of the dam would require only minimal mechanization of spillways, the intake structure, and pump house. The impacts of these operations on the air quality of the area would be insignificant. Utilization of the reservoir for recreational purposes could potentially increase traffic into and out of Jackson County, but not to the degree that would jeopardize the attainment status of the area.

Raw Water Transmission Main

The area that would be affected by the construction of a raw water transmission main from the proposed reservoir at the War Fork and Steer Fork, 2.2 mgd site, and the amount of pipeline that would have to be laid, would be the same as that discussed in Section 3.2.3.2.6 above.

The amount of activity and equipment use for the construction of the transmission main from the War Fork and Steer Fork, 3.5 mgd site was factored into the equipment use and total emissions depicted in Table 3.2.3-2, War Fork and Steer Fork Construction Emissions, of the DEIS for the War Fork and Steer Fork, 3.5 mgd alternative. Since the transmission main leading from the War Fork and Steer Fork, 2.2 mgd reservoir would have a smaller diameter than that from the War Fork and Steer Fork, 3.5 mgd site (14 inches verses 18 inches), less excavation may be necessary for laying the pipeline. However, the length of the pipeline would be the same. For the purposes of this analysis, the level of emissions resulting from construction of the raw water transmission main from the War Fork and Steer Fork, 2.2 mgd reservoir is assumed to be less than or equal to the level generated during construction of the main leading from the War Fork and Steer Fork, 3.5 mgd reservoir discussed in the DEIS. Therefore, the impacts on air quality resulting from this alternative would be adverse, but less than significant.

The operation of the raw water transmission main would require only minimal mechanization. The impacts of these operations on the air quality of the area would be insignificant.

3.2.3.2.8 Wood Creek Lake Pipeline

The area that would be affected by the construction of a water transmission pipeline from the existing Wood Creek Water District distribution system to the JCWA distribution system lies entirely within the KDOT or County road ROW. Approximately 119,500 linear feet, or about 22.6 miles, of water transmission line would have to be laid (Kenvirons, 2000b).

Due to the longer distance over which the pipeline would have to be laid for this alternative, the amount of activity and equipment use for the construction of a Wood Creek Lake transmission pipeline is projected to be more than that for the transmission main leading from any of the War Fork and Steer Fork project sites. However, activity and equipment use, and therefore, level of emissions generated, for the construction of the Wood Creek pipeline would be much less than that for construction of any of the dam and reservoir alternatives described in the DEIS, regardless of the capacity of the pipeline constructed (1.33 mgd or 2.19 mgd). Slightly greater impacts on air quality would be anticipated with the larger capacity pipeline, due to a wider area of disturbance for a larger-diameter pipeline. However, impacts on air quality resulting from this alternative would be adverse, but less than significant.

The operation of the water transmission main would require only minimal mechanization. The impacts of these operations on the air quality of the area would be insignificant.

3.2.3.2.9 Lock 14 Pipeline

The area that would be affected by the construction of a water transmission pipeline from Lock 14 of the Kentucky River to the JCWA Treatment Plant at Tyner Lake lies mostly within the KDOT or County road ROW. Approximately 108,000 linear feet, or about 20.5 miles, of water transmission line would have to be laid (Kenvirons, 2000b).

Due to the longer distance over which the pipeline would have to be laid for this alternative, the amount of activity and equipment use for the construction of a Lock 14 transmission pipeline is projected to be more than that for the transmission main leading from any of the War Fork and Steer Fork project sites. However, activity and equipment use, and therefore, level of emissions generated, for the construction of a Lock 14 pipeline would be much less than that for construction of any of the dam and reservoir alternatives described in the DEIS, regardless of the capacity of the pipeline constructed (1.33 mgd or 2.19 mgd). Slightly greater impacts on air quality would be anticipated with the larger capacity pipeline, due to a wider area of disturbance for a larger-diameter pipeline. However, impacts on air quality resulting from this alternative would be adverse, but less than significant.

The operation of the water transmission main would require only minimal mechanization. The impacts of these operations on the air quality of the area would be insignificant.

3.2.3.2.10 Summary of Impacts

The following table lists the potential impacts on air quality resulting from the additional alternatives investigated in this FEIS.

Table 3.2.3-6. Summary of Impacts on Air Quality From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Affect air quality from a hazardous material or POL spill during storage and handling; • Degrade air quality from fugitive dust and emissions during site preparation, construction of access roads and along existing access roads, and from construction equipment; • Degrade air quality from emissions during maintenance and operation ground vehicles; • Affect air quality from reservoir operations; and • Affect air quality from debris burning.	• Insignificant • Insignificant • Insignificant • Insignificant • Insignificant
War Fork and Steer Fork, 2.2 mgd	• Affect air quality from a hazardous material or POL spill during storage and handling; • Degrade air quality from fugitive dust and emissions during site preparation, construction of access roads and along existing access roads, and from construction equipment; • Degrade air quality from emissions during maintenance and operation ground vehicles; • Affect air quality from reservoir operations; and • Affect air quality from debris burning.	• Insignificant • Insignificant • Insignificant • Insignificant • Insignificant
Wood Creek Lake Pipeline	• Affect air quality from a hazardous material or POL spill during storage and handling; • Degrade air quality from fugitive dust and emissions during site preparation, construction, and from construction equipment; and • Degrade air quality from emissions during maintenance and operation ground vehicles.	• Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Affect air quality from a hazardous material or POL spill during storage and handling; • Degrade air quality from fugitive dust and emissions during site preparation, construction, and from construction equipment; and • Degrade air quality from emissions during maintenance and operation ground vehicles.	• Insignificant • Insignificant • Insignificant

Although all impacts on air quality resulting from all alternatives would be insignificant, there are incremental differences between the impacts at each site. Of the additional alternatives investigated in this FEIS, the War Fork and Steer Fork, 2.2 mgd project site would have the

greatest impacts, followed by the War Fork and Steer Fork, 1.3 mgd site, then the two water transmission pipeline alternatives. Of the two pipeline alternatives, greater impacts on air quality are anticipated with the larger capacity pipeline. These variations are discussed in Sections 3.2.3.2.6 through 3.2.3.2.9. These variations, however, would not change the ratings of impacts given in the above table.

3.2.3.3 Mitigation

Since no significant impacts are anticipated for this resource area, there are no mitigation measures planned.

3.2.4 BIOLOGICAL RESOURCES

3.2.4.1 Affected Environment

Dam and Reservoir

The boundaries of the two smaller proposed War Fork and Steer Fork project sites (1.3 mgd and 2.2 mgd) that are investigated in this FEIS lie completely within the boundaries of the War Fork and Steer Fork, 3.5 mgd project site that was described in the DEIS. Therefore, the aspects of the affected environment common to the dam and reservoir alternatives described in the DEIS are also common to the two smaller War Fork and Steer Fork alternatives. Refer to Section 3.2.4.1, Affected Environment, of the DEIS for this discussion.

Flora

As discussed in Section 3.2.4.1, Affected Environment, of the DEIS, a threatened and endangered species screening study (included as Appendix I of the DEIS) was conducted in late 1998 for the Jackson County Lake Project to identify species of rare, threatened, or endangered plants in Jackson County (Libby et al., 1999a). Most of these species identified are listed by the State of Kentucky, a status that grants no legal protection. Only one of the rare plant species identified as potentially present at all three project sites, the running buffalo clover (*Trifolium stoloniferum*), is listed as endangered both by the State and Federal governments.

Due to the concern about the presence of the running buffalo clover at all of the proposed reservoir sites, a field survey was conducted for the species in the spring of 2000. The survey was conducted at both the War Fork and Steer Fork and the Sturgeon Creek project sites to identify not only existing populations of the running buffalo clover, but also the presence of potential habitat for the species in each of the proposed project areas (Libby et al., 2000). The results of the survey are discussed on a site-specific basis in the following sections. A complete account of the survey is provided in this FEIS as Appendix T.

Fauna

Additional field surveys for the Indiana bat (*Myotis sodalis*) and Virginia big-eared bat (*Corynorhinus townsendii virginianus*) were conducted on each of the proposed dam and reservoir sites for this FEIS. A complete account of these surveys is included as Appendix T of this FEIS.

Mist netting for the Indiana and Virginia big-eared bats was conducted during the summers of 1999 and 2000 within the boundaries of the three proposed War Fork and Steer Fork reservoir alternatives and the two proposed Sturgeon Creek reservoir alternatives, using the guidelines established in the U.S. Fish and Wildlife Service (USFWS) *Agency Draft Indiana Bat (Myotis sodalis) Revised Recovery Plan* (Appendix II) (Libby et al., 2000). The results of this mist-netting are discussed on a site-specific basis in the following sections.

Complete cliffline surveys of both the proposed War Fork and Steer Fork and Sturgeon Creek project sites were conducted from January through April 2000. Surveys were carried out in areas of rock outcrops, rock houses/shelters, rock faces, clifflines, and mine portals, with particular attention given to identifying previously unknown caves and abandoned mine portals for evaluation of potential rare bat habitat. Although some of these may be used as night roosts during the summer, none were found to provide roosting habitat for large numbers of Indiana or Virginia big-eared bats. Several big brown bats were found utilizing rock crevices during winter (Libby et al., 2000).

Anabat analysis was used to identify bat calls in both the proposed War Fork and Steer Fork and Sturgeon Creek project areas. Anabat analysis, which is described in detail in Appendix T of this FEIS, involves the use of a sophisticated system of detectors, recorders, and computer software to differentiate and identify calls from various bat species. The level of confidence using Anabat analysis in species identification is approximately 80 percent (Libby et al., 2000).

The use of Anabat analysis at the proposed project sites resulted in the identification of other bat species that were not captured during the mist net surveys. Site-specific results of the analysis are presented in the following sections.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to section 3.2.4.1, Affected Environment, Raw Water Transmission Main, of the DEIS for information on the aspects of the affected environment common to all alternatives for this action.

3.2.4.1.1 War Fork and Steer Fork

Dam and Reservoir

Flora

As mentioned in Section 3.2.4.1 above, a field survey for the running buffalo clover and it's habitat was conducted at the War Fork and Steer Fork, 3.5 mgd project site in the spring of 2000. The survey resulted in the discovery of no populations or specimens of the plant at this site. In addition, very little running buffalo clover habitat was found to be present on the War Fork and Steer Fork project site (Libby et al., 2000).

Fauna

Nine nights of mist netting were conducted on the proposed War Fork and Steer Fork, 3.5 mgd project site. A total of 129 bats of 5 species were captured in the proposed project area, including the eastern red bat (*Lasiurus borealis*), northern long-eared bat (*Myotis septentrionalis*), eastern pipistrelle (*Pipistrellus subflavus*), little brown bat (*M. lucifugus*), and big brown bat (*Eptesicus fuscus*). All of these species are widely distributed in Kentucky and are commonly captured in a variety of habitats. No Indiana or Virginia big-eared bats were captured at the War Fork and Steer Fork project site (Libby et al., 2000).

Cliffline surveys conducted within the proposed War Fork and Steer Fork project area resulted in the discovery of the green salamander (*Aneides aeneus*) and eastern woodrat (*Neotoma magister*) nests. Both species are species of concern in the State of Kentucky (Libby et al., 2000).

Bat calls were recording using Anabat analysis on one night in the proposed War Fork and Steer Fork project area. A total of 91 bat calls from 7 bat species were recorded. Species recorded at this site include: Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), little brown bat, gray bat (*M. grisescens*), northern long-eared bat, eastern red bat, eastern pipistrelle, and Indiana bat (Libby et al., 2000). Rafinesque's big-eared bat is a species of concern in the State of Kentucky.

Of the 91 bat calls recorded at the proposed War Fork and Steer Fork project site, two were indicated to be the Indiana bat (Libby et al., 2000). As noted above, no Indiana bats were captured in any of the mist netting surveys conducted at the site. These seemingly contradictory findings may support the hypothesis that a low population density of Indiana bats may be foraging within the project area during summer months. In any case, the forest and rockshelters along War Fork do provide potential foraging and roosting habitat for the Indiana and Virginia big-eared bats (Libby, et al., 2000).

There are no other changes or additions to this section for the FEIS. Refer to Section 3.2.4.1.1, War Fork and Steer Fork, Dam and Reservoir, of the DEIS for a discussion on the affected environment for this alternative.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.4.1.1, War Fork and Steer Fork, of the DEIS for information on the raw water transmission main leading from this alternative.

3.2.4.1.2 Sturgeon Creek, 8.5 mgd

Dam and Reservoir

Flora

As mentioned in Section 3.2.4.1 above, a field survey for the running buffalo clover and it's habitat was conducted at the Sturgeon Creek project site in the spring of 2000. The survey resulted in the discovery of no populations or specimens of the plant at this site. However, the survey noted the presence of potential running buffalo clover habitat within the Sturgeon Creek project area (Libby et al., 2000).

Fauna

Twenty-nine nights of mist netting were conducted on the proposed Sturgeon Creek project site. A total of 169 bats of 6 species were captured in the proposed project area, including the eastern red bat, northern long-eared bat, eastern pipistrelle, big brown bat, little brown bat, and

Rafinesque's big-eared bat. With the exception of Rafinesque's big-eared bat, which is a species of concern in Kentucky, all bat species captured on the proposed Sturgeon Creek project site are widely distributed in Kentucky and are commonly captured in a variety of habitats. No Indiana or Virginia big-eared bats were captured at the proposed Sturgeon Creek project site (Libby et al., 2000).

Cliffline surveys conducted within the proposed Sturgeon Creek project area resulted in the discovery of eastern woodrat nests. This species is a species of concern in the State of Kentucky (Libby et al., 2000).

Bat calls were recording using Anabat analysis on three nights in the proposed Sturgeon Creek project area. A total of 455 bat calls from 9 bat species were recorded. Species recorded at this site include: Rafinesque's big-eared bat, gray bat, northern long-eared bat, eastern red bat, eastern pipistrelle, little brown bat, big brown bat, hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and Indiana bat (Libby et al., 2000).

Of the 455 bat calls recorded at the proposed Sturgeon Creek project site, two were indicated to be the Indiana bat (Libby et al., 2000). As noted above, no Indiana bats were captured in any of the mist netting surveys conducted at the site. These seemingly contradictory findings may support the hypothesis that a low population density of Indiana bats may be foraging within the project area during summer months. In any case, the forest and rockshelters along Sturgeon Creek do provide potential foraging and roosting habitat for the Indiana and Virginia big-eared bats (Libby, et al., 2000).

There are no other changes or additions to this section for the FEIS. Refer to Section 3.2.4.1.2, Sturgeon Creek, 8.5 mgd, Dam and Reservoir, of the DEIS for a discussion on the affected environment for this alternative.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.4.1.2, Sturgeon Creek, 8.5 mgd, Raw Water Transmission Main, of the DEIS for information on the raw water transmission main leading from this alternative.

3.2.4.1.3 Sturgeon Creek, 3.5 mgd

Dam and Reservoir

Since the boundaries of the proposed Sturgeon Creek, 3.5 mgd project site lie completely within those of the proposed Sturgeon Creek, 8.5 mgd project site, the areas surveyed, and the results of the surveys, on the proposed Sturgeon Creek, 3.5 mgd project site are the same as those discussed in Section 3.2.4.1.2 above. Please refer to that section for this information.

There are no other changes or additions to this section for the FEIS. Refer to Section 3.2.4.1.3, Sturgeon Creek, 3.5 mgd, Dam and Reservoir, of the DEIS for a discussion on the affected environment for this alternative.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.4.1.3, Sturgeon Creek, 3.5 mgd, Raw Water Transmission Main, of the DEIS for information on the raw water transmission main leading from this alternative.

3.2.4.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The majority of the land within the maximum flood pool level and buffer zone, approximately 215 acres, and virtually all of the land within the normal pool level of the proposed reservoir at the War Fork and Steer Fork, 1.3 mgd site, approximately 65 acres, is covered with second-growth forest of the cove hardwood and upland hardwood working groups, in which deciduous or broad-leaf trees dominate (USGS, No date). Since the boundaries of this proposed site lie completely within those of the War Fork and Steer Fork, 3.5 mgd project site, the discussions of the affected environment provided in Section 3.2.4.1.1, War Fork and Steer Fork, of the DEIS and this FEIS are applicable to the proposed War Fork and Steer Fork, 1.3 mgd site. Please refer to these sections for this information.

Raw Water Transmission Main

The approximately 8.9-mile route for the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir to the Jackson County Water Association (JCWA) Treatment Plant would run mostly alongside existing roadways in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW) for all but about one mile. This one-mile portion would run through a mixture of fields and second-growth woodland. ROW would need to be obtained in the form of a Special Use Permit for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners.

Areas of particular biological importance to both aquatic and terrestrial organisms are creek crossings, although upland habitats are important for Indiana bats. In addition to one or two crossings of Hughes Fork, a tributary of War Fork, there are a number of minor and intermittent creeks that would be crossed en route. Preliminary engineering analysis estimates a total of 60 linear feet of creek crossings (Kenvirons, 1999a). Much of the proposed route would follow KY 587, which runs along the high divides between several watersheds, thereby avoiding most direct contact with watercourses. No forested wetlands would be encountered by the proposed water transmission main.

3.2.4.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The majority of the land within the maximum flood pool level and buffer zone, approximately 275 acres, and virtually all of the land within the normal pool level of the proposed reservoir at the War Fork and Steer Fork, 2.2 mgd site, approximately 88 acres, is covered with second-growth forest of the cove hardwood and upland hardwood working groups, in which deciduous or broad-leaf trees dominate (USGS, No date). Since the boundaries of this proposed site lie completely within those of the War Fork and Steer Fork, 3.5 mgd project site, the discussions of the affected environment provided in Section 3.2.4.1.1, War Fork and Steer Fork, of the DEIS and this FEIS are applicable to the proposed War Fork and Steer Fork, 2.2 mgd site. Please refer to these sections for this information.

Raw Water Transmission Main

The route for the raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir to the JCWA Treatment Plant would be the same as that for the transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir discussed in Section 3.2.4.1.4 above. Refer to this section for a discussion of the affected environment for this action.

3.2.4.1.6 Wood Creek Lake Pipeline

Under the Wood Creek Lake Pipeline alternative, a water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25 to Dean Hundley Road. The transmission main would run northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. The total distance that would be traveled by this pipeline is 119,500 linear feet, or 22.6 miles (Kenvirons, 2000b).

The entire length of the proposed route of the pipeline would follow alongside existing roadways in the KDOT or County ROW. In general, such transportation corridors possess very little biological value. Flora that occurs alongside roads is typically well-adapted to highly-disturbed sites and frequently consists of introduced exotic (non-native) species. Fauna consists of small and large animals trying to cross the roadway, as well as some species that may be attracted to road salts, grazing on roadside and embankment grasses, or feeding on road kill.

Areas of particular biological importance to both aquatic and terrestrial organisms are creek crossings, although upland habitats are important for Indiana bats. Preliminary engineering analysis estimates a total of 1,060 linear feet of creek crossings for this alternative (Kenvirons, 2000b).

3.2.4.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the Lock 14 raw water transmission main would run south alongside KY 399 towards Brandenburg Cemetery to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The main would run westward alongside Hale Ridge-Arvel Road to KY 587, and then run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). The total distance that would be traveled by this pipeline is 108,000 linear feet, or 20.5 miles (Kenvirons, 2000b).

The affected environment for this alternative would be very similar to that described for the Wood Creek Lake pipeline in Section 3.2.4.1.6 above. Please refer to that section for this information. Preliminary engineering analysis estimates a total of 150 linear feet of creek crossings for this alternative (Kenvirons, 2000b).

3.2.4.2 Environmental Consequences

No changes have been made to the list of potential impacts on biological resources resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.4.2, Environmental Consequences, of the DEIS for this list. As in the DEIS, potential impacts on biological resources were derived from evaluating features of the proposed action that could affect these resources, and by considering ecological characteristics of each of the proposed project sites.

Dam and Reservoir

As mentioned in above, no Indiana or Virginia big-eared bats were captured during any of the mist-netting surveys conducted for this EIS at any of the proposed War Fork and Steer Fork or the Sturgeon Creek reservoir sites. However, the probable presence of two Indiana bats was detected in the summer of 2000 by Anabat analysis of bat calls in both of the proposed project areas. This is consistent with the view of the USFWS and the USFS, which was stated in the DEIS, that Indiana bats are likely to forage in the forests and along stream corridors, particularly in the area of the proposed War Fork and Steer Fork project site. However, the field surveys suggest that if the bats do occur on or near the proposed War Fork and Steer Fork project site, they likely exist at low densities.

As discussed in Section 3.2.4.2, Environmental Consequences, of the DEIS, if foraging area were a limiting factor, permanent flooding of any of the proposed reservoir sites, but particularly one of the War Fork and Steer Fork sites, could conceivably reduce the size of the foraging area and food supply needed to sustain present numbers of local bat populations, and thus proportionately reduce the population. However, it is not believed that food supply is the limiting factor for local populations (Libby, 2000b). In addition, both species of bats display

some flexibility in their food habits (Libby et al., 1999b). While Indiana bats forage primarily in upland, bottomland, and riparian forests, they also utilize forest and cropland edges, fallow fields, and areas of impounded water. Virginia big-eared bats forage along canyon walls, forest edges along intermittent streams, and old fields. Thus, there may not be diminished foraging habitat or food availability due to the impoundment of a reservoir at any of the proposed sites.

As mentioned in Section 3.2.4.1 above, two other vertebrates, both Kentucky species of concern, were discovered during the field surveys conducted at each of the proposed dam and reservoir sites. Both the green salamander and nests of the eastern woodrat were discovered on the proposed War Fork and Steer Fork project site, while only eastern woodrat nests were observed on the proposed Sturgeon Creek site (Libby et al., 2000). Ground clearing and grading at any of the project sites would likely destroy individual specimens of these species, and inundation of the sites by the proposed reservoir would permanently reduce habitat and perhaps lead to further local fragmentation of remaining habitat. According to the criteria listed in Appendix C of this EIS, this would be rated as a moderately significant impact.

The only other Federally-listed species believed to be potentially present at both the proposed War Fork and Steer Fork and the Sturgeon Creek project sites, the running buffalo clover (*Trifolium stoloniferum*), was not discovered during field surveys of the project areas. Therefore, it is unlikely that this plant species would be directly impacted by the construction of a dam and reservoir at any of the proposed project sites. However, potential habitat for the running buffalo clover was discovered on the proposed Sturgeon Creek project sites. Should a dam and reservoir be constructed at either of the proposed Sturgeon Creek sites, this potential habitat would be permanently destroyed.

Section 3.2.4.2, Environmental Consequences, of the DEIS notes that, during impoundment, downstream flows would be reduced to the minimum average flow that occurs for seven consecutive days with a recurrence interval of ten years (7Q10). This is not necessarily correct. According to the Kentucky Division of Water (KDOW), during impoundment, as well as in operation, the outflow from the dam must equal the inflow into the reservoir during low-flow periods. The flow would not be reduced to the 7Q10 unless the natural flow is equal to the 7Q10. The 7Q10 would be a rare occurrence; required outflows would be higher than the 7Q10 during most of the low-flow season (summer and fall months). This correction, however, would not result in any changes to the impacts discussed in Section 3.2.4.2 of the DEIS.

There are no other changes to this section for the FEIS. Refer to Section 3.2.4.2, Environmental Consequences, of the DEIS for a discussion of the impacts on biological resources that are common to all dam and reservoir alternatives. This discussion is also applicable to the War Fork and Steer Fork, 1.3 mgd and 2.2 mgd sites evaluated in this FEIS.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.4.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS for a discussion of potential impacts on biological resources that are common to all alternatives as a result of this action.

3.2.4.2.1 War Fork and Steer Fork

As mentioned in Section 3.2.4.2, Environmental Consequences, of the DEIS, representatives of the USFS reported observations of limestone in the vicinity of the proposed War Fork and Steer Fork dam site. These representatives expressed concern over whether a reservoir upstream may lead to seepage; dissolving of limestone; underground channel formation, utilization, or enlargement; and the eventual flooding of caves used for roosting and hibernacula by Indiana and Virginia big-eared bats. These problems may arise by impounding water to create the proposed reservoir, by creating hydrostatic pressure within the reservoir, or by placing certain rock strata into constant contact with standing water.

As a result of these concerns, a visual reconnaissance was performed at the proposed War Fork and Steer Fork dam site. A report of this site reconnaissance is presented as Appendix O of this FEIS. Based on published geologic data and the visual reconnaissance, there does not appear to be any hydraulic connection between the proposed War Fork and Steer Fork project site and downstream karst features. Therefore, the risk of flooding downstream bat hibernacula from the proposed dam at the proposed War Fork and Steer Fork site would be minimal or non-existent.

However, the site reconnaissance reported no flow in War Fork at the Turkey Foot Road bridge (Yost, 2000b). In addition, it was noted that War Fork suddenly sinks in an alluvium-filled streambed swallet approximately 800 feet upstream of the bridge. A short distance downstream of the bridge, near the entrance to Turkey Foot Campground, it was reported that the flow of War Fork increases significantly due to a spring discharge under a large ledge of Newman Limestone. A map of these sites is provided in Appendix O of this FEIS. Although it cannot be proven until dye testing is performed, it is likely that this spring is the resurgence of the War Fork flow that sank upstream of the Turkey Foot Road bridge.

There are no other changes or additions to this section for the FEIS. Refer to Section 3.2.4.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts on biological resources resulting from this alternative.

3.2.4.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.4.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a detailed discussion on the potential impacts on biological resources resulting from this alternative.

3.2.4.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.4.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a detailed discussion on the potential impacts on biological resources resulting from this alternative.

3.2.4.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.4.2.4, No Action, of the DEIS for a discussion on the potential impacts on biological resources resulting from this alternative.

3.2.4.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.4.2.5, Summary of Impacts, and to Table 3.2.4-2, Summary of Impacts on Biological Resources, of the DEIS.

3.2.4.2.6 War Fork and Steer Fork, 1.3 mgd

Since the boundaries of the proposed War Fork and Steer Fork, 1.3 mgd project site lie completely within those of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, potential impacts on biological resources for these two alternatives would be similar. Refer to Section 3.2.4.2.1, War Fork and Steer Fork, of the DEIS and the FEIS for this discussion.

As a result of the smaller area of land required for the War Fork and Steer Fork, 1.3 mgd alternative, a proportionately smaller acreage of forest habitat would be impacted than at the War Fork and Steer Fork, 3.5 mgd alternative described in the DEIS. Impacts on Federally-listed threatened or endangered species at the War Fork and Steer Fork, 1.3 mgd site would be the same as those discussed for the War Fork and Steer Fork, 3.5 mgd alternative, and are projected to be minimal.

3.2.4.2.7 War Fork and Steer Fork, 2.2 mgd

Since the boundaries of the proposed War Fork and Steer Fork, 2.2 mgd project site lie completely within those of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, potential impacts on biological resources for these two alternatives would be similar. Refer to Section 3.2.4.2.1, War Fork and Steer Fork, of the DEIS and the FEIS for this discussion.

As a result of the smaller area of land required for the War Fork and Steer Fork, 2.2 mgd alternative, a proportionately smaller acreage of forest habitat would be impacted than at the War Fork and Steer Fork, 3.5 mgd alternative described in the DEIS. However, more forest habitat would be impacted by this alternative than for the War Fork and Steer Fork, 1.3 mgd alternative described above. Impacts on Federally-listed threatened or endangered species at the War Fork and Steer Fork, 2.2 mgd site would be the same as those discussed for the War Fork and Steer Fork, 3.5 mgd alternative, and are projected to be minimal.

3.2.4.2.8 Wood Creek Lake Pipeline

Biological impacts from constructing a water transmission pipeline from the existing Wood Creek Water District water distribution system to the existing JCWA water distribution system

would be minimal, except for the possibility of turbidity and accidental chemical spills at stream crossings. This potential impact would be of very limited extent and duration, and therefore, is considered insignificant. The presence of workers and equipment during construction of the pipeline, as well as the generation of noise by the equipment, may displace nearby wildlife. However, this impact would be temporary, and the wildlife would likely return to the area after the completion of construction. Impacts on biological resources associated with this alternative would not differ based on the capacity of the pipeline constructed (1.3 mgd verses 2.2 mgd).

3.2.4.2.9 Lock 14 Pipeline

Biological impacts from constructing a raw water transmission pipeline from Lock 14 of the Kentucky River to the JCWA Treatment Plant would be minimal, except for the possibility of turbidity and accidental chemical spills at stream crossings. This potential impact would be of very limited extent and duration, and therefore, is considered insignificant. Slightly greater impacts on biological resources would be anticipated for the portion of the pipeline route that could travel cross-country. Should this option for the route be chosen, clearing of existing trees and shrubs along the proposed route would likely be necessary. However, impacts on biological resources as a result of this clearing would be minimal. The presence of workers and equipment during construction of the pipeline, as well as the generation of noise by the equipment, may displace nearby wildlife. However, this impact would be temporary, and the wildlife would likely return to the area after the completion of construction. Impacts on biological resources associated with this alternative would not differ based on the capacity of the pipeline constructed (1.3 mgd verses 2.2 mgd).

3.2.4.2.10 Summary of Impacts

The following table lists the potential impacts on biological resources resulting from the additional alternatives investigated in this FEIS.

Table 3.2.4-3. Summary of Impacts on Biological Resources From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment; • Eliminate potential habitats, but unlikely to adversely affect, Federally-listed threatened and endangered species from permanent removal of vegetation; • Short-term harm to wildlife/vegetation by degrading air quality; • Short-term harm to downstream aquatic biota from degraded water quality; • Short-term harm to wildlife, vegetation, and aquatic biota from risk of POL/chemical spills during storage and handling;	• Insignificant • Insignificant • Insignificant • Moderately Significant • Insignificant

	• Short-term harm to downstream aquatic biota from flow reductions during impoundment; • Permanently eliminate existing terrestrial plant communities and wildlife habitat; • Permanently eliminate stream aquatic habitat by replacing it with laucustrine (lake) habitat; • Gain lacustrine fish species by changing habitat from stream to lake in impoundment area; • Long-term effects on downstream aquatic biota and riparian vegetation from changes in water temperature, reduced DO, and reduced water flows; • Permanently block migration of small terrestrial and aquatic mammals, amphibians, and reptiles due to reservoir; • Attract migratory and nesting waterfowl, shorebirds, and wading birds at the reservoir; and • Encounter problems with aquatic weeds and mosquito breeding at the reservoir.	• Moderately Significant • Moderately Significant • Moderately Significant • Moderately Significant • Moderately Significant • Moderately Significant • Insignificant
War Fork and Steer Fork, 2.2 mgd	• Temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment; • Eliminate potential habitats, but unlikely to adversely affect, Federally-listed threatened and endangered species from permanent removal of vegetation; • Short-term harm to wildlife/vegetation by degrading air quality; • Short-term harm to downstream aquatic biota from degraded water quality; • Short-term harm to wildlife, vegetation, and aquatic biota from risk of POL/chemical spills during storage and handling; • Short-term harm to downstream aquatic biota from flow reductions during impoundment; • Permanently eliminate existing terrestrial plant communities and wildlife habitat; • Permanently eliminate stream aquatic habitat by replacing it with laucustrine (lake) habitat; • Gain lacustrine fish species by changing habitat from stream to lake in impoundment area; • Long-term effects on downstream aquatic biota and riparian vegetation from changes in water temperature, reduced DO, and reduced water flows;	• Insignificant • Insignificant • Insignificant • Moderately Significant • Insignificant • Moderately Significant • Moderately Significant • Moderately Significant • Moderately Significant

	• Permanently block migration of small terrestrial and aquatic mammals, amphibians, and reptiles due to reservoir; • Attract migratory and nesting waterfowl, shorebirds, and wading birds at the reservoir; and • Encounter problems with aquatic weeds and mosquito breeding at the reservoir.	• Moderately Significant • Moderately Significant • Insignificant
Wood Creek Lake Pipeline	• Temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment; • Short-term harm to wildlife/vegetation by degrading air quality; • Temporarily degrade aquatic habitat from turbidity and sedimentation during water line construction at stream crossings; • Short-term harm to wildlife, vegetation, and aquatic biota from risk of POL/chemical spills during storage and handling; and • Permanently eliminate existing terrestrial plant communities and wildlife habitat.	• Insignificant • Insignificant • Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Temporarily displace terrestrial wildlife due to removal of vegetation and disturbance from construction equipment; • Short-term harm to wildlife/vegetation by degrading air quality; • Temporarily degrade aquatic habitat from turbidity and sedimentation during water line construction at stream crossings; • Short-term harm to wildlife, vegetation, and aquatic biota from risk of POL/chemical spills during storage and handling; and • Permanently eliminate existing terrestrial plant communities and wildlife habitat.	• Insignificant • Insignificant • Insignificant • Insignificant • Insignificant

3.2.4.3 Mitigation

In addition to the biological resource mitigation measures described in Section 3.2.4.3 of the DEIS, the following measures are recommended to benefit any populations of the Indiana and Virginia big-eared bats near the proposed War Fork and Steer Fork project site that potentially utilize the proposed reservoir area and surrounding forests for foraging and roosting:

- Trees should only be cut from November 1 through March 1, particularly the following species of primary roosting importance: silver maple (*Acer saccharinum*), shagbark hickory (*Carya ovata*), shellbark hickory (*C. laciniosa*), bitternut hickory (*C. cordiformis*), green ash (*Fraxinus pennsylvanica*), white ash (*F. americana*), eastern

cottonwood (*Populus deltoides*), red oak (*Quercus rubra*), post oak (*Q. stellata*), white oak (*Q. alba*), slippery elm (*Ulmus rubra*), and American elm (*U. americana*). Wherever and whenever possible, leave any dead or damaged trees that are not problematic.

- Artificial bat boxes can provide summer roosting habitat in the form of temporary roosts (used only occasionally or between foraging bouts) or regular roosts (mostly bachelors and/or non-reproductive females) for myotine bats, including the northern long-eared bat (*Myotis septentrionalis*) and the little brown bat (*M. lucifugus*). While Indiana bats have not been documented using artificial bat boxes, very few detailed monitoring studies have been conducted in prime habitats. Thirty boxes installed at strategic locations, such as in the headwaters of the proposed reservoir, at the edge of lake/littoral zones, and along flyways, and proper configurations (e.g., proper aspects, heights, and distances from trees) would provide an excellent opportunity to test the use of artificial boxes as potential conservation measures. These boxes could provide needed information on their effectiveness. There are several good bat box designs, including the rocket box design and nursery house design.

- Caves downstream of the proposed War Fork and Steer Fork reservoir site may need additional protection from human disturbance. One cave is already gated, although it may be in need some modification. Gating other caves should be considered, as it may benefit the rate bat species that utilize these habitats.

There are no other changes to this section for the FEIS. Refer to Section 3.2.4.3, Mitigation, of the DEIS, for an additional list of measures which could be taken to minimize impacts on biological resources resulting from the proposed action.

3.2.5 NOISE

Section 3.2.5, Noise, of the DEIS provides an introduction on the properties of noise, the effects of noise on the human ear, and recommended noise levels around different types of land use. There are no changes to this section for the FEIS. Please refer to the DEIS for more information.

3.2.5.1 Affected Environment

Dam and Reservoir

There are no changes to this section for the FEIS. Refer to Section 3.2.5.1, Affected Environment, for a discussion on the common aspects of the affected environment for all dam and reservoir alternatives.

Raw Water Transmission Main

The proposed water transmission main would run underground, mostly alongside existing roadways within the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW) for all alternatives. For the raw water transmission main leading from each of the War Fork and Steer Fork dam and reservoir alternatives, ROW would need to be obtained in the form of a Special Use Permit from the USFS for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route leading from the War Fork and Steer Fork alternatives that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners.

3.2.5.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.5.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected environment for this alternative.

3.2.5.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.5.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.5.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.5.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.5.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

Since the boundaries of the War Fork and Steer Fork, 1.3 mgd site lie within the boundaries of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, and the location of the proposed dam at each of these sites is the same, the nearest sensitive receptors to these two alternatives are the same. Table 3.2.5-3 in the DEIS shows the nearest sensitive noise receptors to the proposed War Fork and Steer Fork dam site.

Raw Water Transmission Main

The raw water transmission main leading from the pump station at the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run northeast alongside F.S. 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d). This equates to approximately 47,000 linear feet, or about 8.9 miles, of water transmission line that would have to be laid (Kenvirons, 2000b).

3.2.5.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

Since the boundaries of the War Fork and Steer Fork, 2.2 mgd site lie within the boundaries of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, and the location of the proposed dam at each of these sites is the same, the nearest sensitive receptors to these two alternatives are the same. Table 3.2.5-3 in the DEIS shows the nearest sensitive noise receptors to the proposed War Fork and Steer Fork dam site.

Raw Water Transmission Main

The raw water transmission main leading from the pump station at the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route as that for the War Fork and Steer Fork, 1.3 mgd reservoir discussed in Section 3.2.5.1.4 above.

3.2.5.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road. The transmission main would run northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490

north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. This equates to approximately 119,500 linear feet, or 22.6 miles, of water transmission line that would have to be laid (Kenvirons, 2000b).

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd from Wood Creek Lake to the JCWA distribution system and one capable of transporting 2.19 mgd to the JCWA distribution system. Regardless of the pipeline capacity, the same route would be followed.

3.2.5.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). This equates to approximately 108,000 linear feet, or 20.5 miles, of water transmission line that would have to be laid (Kenvirons, 2000b).

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd from Lock 14 to the JCWA Treatment Plant and one capable of transporting 2.19 mgd to the JCWA Treatment Plant. Regardless of the pipeline capacity, the same route would be followed.

3.2.5.2 Environmental Consequences

No changes have been made to the list of potential noise impacts resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.5.2, Environmental Consequences, of the DEIS for this list.

As discussed in Section 3.2.5.2, Environmental Consequences, of the DEIS, noise impacts were derived by identifying features of the proposed action that would create noise at each of the alternative project sites, by predicting the maximum noise level and duration expected at each of the sites, and by anticipating the level of noise expected to reach the nearest sensitive receptors to each of the sites. This method was also used to evaluate the noise impacts associated with the additional alternatives investigated in this FEIS.

Dam and Reservoir

The method used to evaluate noise impacts from the construction and operation of a dam and reservoir at any of the alternative project sites is discussed in Section 3.2.5.2, Environmental Consequences, of the DEIS. Tables 3.2.5-6, Planned Construction Equipment and Hours of Use, and 3.2.5-7, Equipment Utilization for Noise Analysis (Maximum Noise), in the DEIS provide the necessary information for this analysis. No changes have been made to the method of analysis or to the noise data for the FEIS.

The same types of equipment would be used for construction of the additional dam and reservoir alternatives investigated in this FEIS, although at different quantities and durations of use. The exact quantities and durations of equipment use for the additional alternatives investigated in this FEIS are unknown. Therefore, the discussion of impacts on noise presented in Sections 3.2.5.2.6 through 3.2.5.2.9 of this FEIS involves a qualitative comparison, based on the size of the project and subsequent assumptions about equipment use, to the alternatives investigated in the DEIS.

As discussed in the DEIS, blasting may be required for the construction of the dam, especially near the foundation. Time and cost would be the primary reasons for the selection of blasting over other methods. A graduated blasting plan would be developed. For information on this blasting plan, refer to Section 3.2.5.2, Environmental Consequences, of the DEIS.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.5.2, Environmental Consequences, of the DEIS for a discussion of the noise impacts resulting from the construction and operation of a water transmission main.

3.2.5.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential noise impacts resulting from this alternative.

3.2.5.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.5.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential noise impacts resulting from this alternative.

3.2.5.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.5.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential noise impacts resulting from this alternative.

3.2.5.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.5.2.4, No Action, of the DEIS for a discussion of the potential noise impacts resulting from this alternative.

3.2.5.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.5.2.5, Summary of Impacts, and Table 3.2.5-11, Summary of Impacts on Noise, of the DEIS.

3.2.5.2.6 War Fork and Steer Fork, 1.3 mgd

Based on an estimated RCC fill volume of 41,000 cubic yards (cu. yd.), an estimated volume of 3,100 cu. yd. of conventional concrete, and an estimated volume of 1,800 cu. yd. of concrete for the upstream and spillway pre-cast panels for the dam at the War Fork and Steer Fork, 1.3 mgd site (Kenvirons, 2000b), the approximate number of truckloads of each raw material that would be needed for the dam are: 450 truckloads of cement; 1,030 truckloads of sand; and 2,230 truckloads of gravel. The War Fork and Steer Fork, 1.3 mgd site would be accessed using Turkey Foot Road and a new road adjacent to War Fork (Kenvirons, 1999c). The new access road would require an additional 3 to 5 acres to be disturbed for construction, and would be approximately 3,500 feet, or about 0.7 miles, in length (Kenvirons, 2000b). This road may later be used for permanent access to the dam.

Since the size of the dam at the War Fork and Steer Fork, 1.3 mgd site would be smaller than the dam at the War Fork and Steer Fork, 3.5 mgd site, discussed in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS, the duration of construction would be shorter, and the hours of equipment use would be less. However, assuming the worst case noise scenario discussed in Section 3.2.5.2, Environmental Consequences, of the DEIS, the maximum level of noise for this construction site would be 100.84 A-weighted decibels (dBA). Since the boundaries of the War Fork and Steer Fork, 1.3 mgd site lie within the boundaries of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, the nearest sensitive receptors to these two alternatives are the same. Therefore, the maximum noise level anticipated to reach these sensitive receptors would be the same as those provided in Table 3.2.5-8 in the DEIS. The discussion of impacts on these sensitive receptors would also be the same as those presented in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS.

Noise impacts resulting from potential blasting activities and from operation of the dam would be the same as those discussed in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS.

3.2.5.2.7 War Fork and Steer Fork, 2.2 mgd

Based on an estimated RCC fill volume of 61,000 cu. yd., an estimated volume of 4,600 cu. yd. of conventional concrete, and an estimated volume of 2,330 cu. yd. of concrete for the upstream and spillway pre-cast panels for the dam at the War Fork and Steer Fork, 2.2 mgd site (Kenvirons, 2000b), the approximate number of truckloads of each raw material that would be needed for the dam are: 660 truckloads of cement; 1,510 truckloads of sand; and 3,270

truckloads of gravel. The War Fork and Steer Fork, 2.2 mgd site would be accessed using Turkey Foot Road and a new road adjacent to War Fork (Kenvirons, 1999c). The new access road would require an additional 3 to 5 acres to be disturbed for construction, and would be approximately 3,500 feet, or about 0.7 miles, in length (Kenvirons, 2000b). This road may later be used for permanent access to the dam.

Since the size of the dam at the War Fork and Steer Fork, 2.2 mgd site would be smaller than the dam at the War Fork and Steer Fork, 3.5 mgd site, discussed in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS, the duration of construction would be shorter, and the hours of equipment use would be less. However, assuming the worst case noise scenario discussed in Section 3.2.5.2, Environmental Consequences, of the DEIS, the maximum level of noise for this construction site would be 100.84 A-weighted decibels (dBA). Since the boundaries of the War Fork and Steer Fork, 2.2 mgd site lie within the boundaries of the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, the nearest sensitive receptors to these two alternatives are the same. Therefore, the maximum noise level anticipated to reach these sensitive receptors would be the same as those provided in Table 3.2.5-8 in the DEIS. The discussion of impacts on these sensitive receptors would also be the same as those presented in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS.

Noise impacts resulting from potential blasting activities and from operation of the dam would be the same as those discussed in Section 3.2.5.2.1, War Fork and Steer Fork, of the DEIS.

3.2.5.2.8 Wood Creek Lake Pipeline

The noise impacts associated with the construction and operation of a water transmission pipeline from the Wood Creek Water District water distribution system to the JCWA distribution system would be similar to those discussed for the raw water transmission main in Section 3.2.5.2, Environmental Consequences, of the DEIS. Although this pipeline would be longer than those associated with any of the dam and reservoir alternatives, the same types of construction equipment would be used for this alternative, and would generate the same level of noise, although for a longer duration. The noise impacts associated with this alternative would not differ based on the capacity of the pipeline constructed (1.3 mgd verses 2.2 mgd).

3.2.5.2.9 Lock 14 Pipeline

The noise impacts associated with the construction and operation of a water transmission pipeline from Lock 14 of the Kentucky River to the JCWA Treatment Plant would be similar to those discussed for the raw water transmission main in Section 3.2.5.2, Environmental Consequences, of the DEIS. Although this pipeline would be longer than those associated with any of the dam and reservoir alternatives, due to the longer distance of Lock 14 from the treatment plant, the same types of construction equipment would be used for this alternative, and would generate the same level of noise, although for a longer duration. The noise impacts associated with this alternative would not differ based on the capacity of the pipeline (1.3 mgd verses 2.2 mgd).

3.2.5.2.10 Summary of Impacts

The following table lists the potential impacts on noise resulting from the additional alternatives investigated in this FEIS.

Table 3.2.5-12. Summary of Impacts On Noise From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Disturb or displace wildlife from noise created during the site preparation and construction activities; • Affect residents from noise created during the site preparation and construction activities; • Affect residents and wildlife from noise created during possible blasting; and • Affect residents and wildlife from noise created during operation of the reservoir.	• Insignificant • Insignificant • Insignificant • Insignificant
War Fork and Steer Fork, 2.2 mgd	• Disturb or displace wildlife from noise created during the site preparation and construction activities; • Affect residents from noise created during the site preparation and construction activities; • Affect residents and wildlife from noise created during possible blasting; and • Affect residents and wildlife from noise created during operation of the reservoir.	• Insignificant • Insignificant • Insignificant • Insignificant
Wood Creek Lake Pipeline	• Disturb or displace wildlife from noise created during the site preparation and construction activities; • Affect residents from noise created during the site preparation and construction activities; and • Affect residents and wildlife from noise created during possible blasting.	• Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Disturb or displace wildlife from noise created during the site preparation and construction activities; • Affect residents from noise created during the site preparation and construction activities; and • Affect residents and wildlife from noise created during possible blasting.	• Insignificant • Insignificant • Insignificant

Impacts on noise would be greater for the dam and reservoir alternatives than for the water transmission pipeline alternatives due to a greater amount and longer duration of equipment use. Although all impacts on noise resulting from all alternatives would be insignificant, there are incremental differences between the impacts of each alternative. These differences are discussed

in detail in Sections 3.2.5.2.6 through 3.2.5.2.9. These variations, however, would not change the ratings of impacts listed in the above table.

3.2.5.3 Mitigation

Since no significant, adverse impacts are anticipated for this resource area, there are no mitigation measures planned or proposed.

3.2.6 RECREATION

3.2.6.1 Affected Environment

Recreation includes all of the group and individual leisure activities within a given area. The locations of all proposed dam and reservoir sites lie within the eastern portion of Jackson County, Kentucky. The raw water transmission main leading from each of the proposed reservoir sites or from an existing source of surface water would run mostly alongside existing roadways in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW), with the exception of the ROW for portions of the water main leading from the War Fork and Steer Fork dam and reservoir alternatives that would require a Special Use Permit from the U.S. Forest Service (USFS). These portions are described in Section 3.2.6.1.4 below. Section 1.2.2, Recreation Needs, of the DEIS discusses the recreation needs in Jackson County and the surrounding region.

3.2.6.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to section 3.2.6.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected environment for this alternative.

3.2.6.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to section 3.2.6.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.6.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.6.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.6.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The proposed War Fork and Steer Fork, 1.3 mgd project site lies at the edge of the Daniel Boone National Forest (DBNF). The proposed dam site and most of the proposed reservoir area are on land managed by the USFS. Of the approximately 65 acres up to normal pool level of the proposed reservoir at this site, nearly all acres are managed by the USFS. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 215 acres of land. Of these 215 acres, 192 acres are currently managed by the USFS; the remaining 23 acres are privately-owned (Kenvirons, 2000b).

Since the War Fork and Steer Fork, 1.3 mgd project site lies completely within the War Fork and Steer Fork, 3.5 mgd site that was described in the DEIS, the affected environment, as it relates to recreation, for these two sites is the same. Please refer to Section 3.2.6.1.1, War Fork and Steer Fork, of the DEIS for this information.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run approximately 8.9 miles to the JCWA Treatment Plant. All but approximately one mile would follow alongside existing roadways, mostly in the KDOT or County ROW. ROW would need to be obtained in the form of a Special Use Permit for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners. The transmission main would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d). There are no known recreational facilities or uses along this route.

3.2.6.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The proposed War Fork and Steer Fork, 2.2 mgd project site lies at the edge of the DBNF. The proposed dam site and most of the proposed reservoir area are on land managed by the USFS. Of the approximately 88 acres up to normal pool level of the proposed reservoir at this site, nearly all acres are managed by the USFS. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 275 acres of land. Of these 275 acres, 244 acres are currently managed by the USFS; the remaining 31 acres are privately-owned (Kenvirons, 2000b).

Since the War Fork and Steer Fork, 2.2 mgd project site lies completely within the War Fork and Steer Fork, 3.5 mgd site that was described in the DEIS, the affected environment, as it relates to recreation, for these two sites is the same. Please refer to Section 3.2.6.1.1, War Fork and Steer Fork, of the DEIS for this information.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route as that from the proposed War Fork and Steer Fork, 1.3 mgd reservoir described in Section 3.2.6.1.4 above. There are no known recreational facilities or uses along this route.

3.2.6.1.6 Wood Creek Lake Pipeline

Wood Creek Lake in northern Laurel County has a normal pool surface area of 692 acres. There are many recreational facilities associated with Wood Creek Lake. The Wood Creek Water District owns and operates a boat dock, bait shop, and boat ramp on the lake. Three other boat ramps are situated around the lake. There are about 90 to 100 boat docks around the lake, approximately 90 percent of which are fixed, not floating. A permit is required to construct a boat dock on the lake, and all docks are required to be built of treated wood (Napier, 2000).

Fishing is permitted on Wood Creek Lake, and is done from boats, shores, and docks. The lake is stocked by the Kentucky with catfish, trout, bass, and other sport fish. No swimming or other contact recreation is permitted on the lake. In addition, no houseboats or boats with toilet facilities are permitted on the lake (Napier, 2000).

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road. The transmission main would run northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would then run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. There are no known recreation facilities or uses along this route.

3.2.6.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 towards Brandenburg Cemetery to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road towards Cressmont, veering south alongside Hale Ridge-Arvel Road towards Arvel. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 towards New Zion until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). There are no known recreational facilities or uses along this route. In addition, there are no recreational facilities currently located at Lock 14 of the Kentucky River.

3.2.6.2 Environmental Consequences

Since two of the additional alternatives investigated in this FEIS involve the construction of a pipeline from existing sources of surface water, one addition has been made to the list of potential impacts on recreation resulting from the project for the FEIS. This addition is:

- Affect current recreational opportunities at existing sources of surface water in surrounding counties.

Please refer to Section 3.2.3.2, Environmental Consequences, of the DEIS for the remainder of the list of potential impacts on recreation.

As in the DEIS, potential impacts on recreation were determined through evaluation of the existing recreational opportunities around the proposed project sites, the types of activities under the proposed action that would affect these opportunities, the duration of these activities, and the size of the affected areas.

One change to this section for the FEIS involves the rate of outflow from the dam during impoundment and operation of the reservoir. The DEIS noted that, during impoundment of the reservoir, downstream flows would be reduced to the 7Q10. This is not necessarily correct. During low-flow periods, the outflow from the dam must be equal to the inflow. Therefore, the flow would not be reduced to the 7Q10 unless the natural flow at a given time is equal to the 7Q10. Required outflows would be much higher than the 7Q10 during most of the low-flow season. Thus, adverse effects on aquatic recreation during summer, fall, and winter in the portions of the stream immediately below the dam would be somewhat less than described in the DEIS.

Certain comments received on the DEIS noted concern that construction of a reservoir may eliminate sightseeing as a form of tourism in Jackson County. On the contrary, the proposed reservoir may enhance this aspect of tourism by providing new habitat types for viewing and better-developed hiking trails and access.

There are no other changes to this section for the FEIS. Refer to Section 3.2.6.2, Environmental Consequences, of the DEIS for a discussion of the impacts on recreation that are common to all alternatives.

3.2.6.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.6.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the impacts of this alternative on recreation.

3.2.6.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.6.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the impacts of this alternative on recreation.

3.2.6.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.6.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the impacts of this alternative on recreation.

3.2.6.2.4 No Action

It was noted in the DEIS that, under the No Action alternative, area residents would continue to travel farther for their recreation. It should be emphasized that lake-based recreation is referred to here. Refer to Section 3.2.6.2.4, No Action, of the DEIS for a complete discussion of the impacts of this alternative on recreation.

3.2.6.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.6.2.5, Summary of Impacts, and Table 3.2.6-2, Summary of Impacts on Recreation, of the DEIS.

3.2.6.2.6 War Fork and Steer Fork, 1.3 mgd

While the exact types and locations of the proposed recreational facilities at the War Fork and Steer Fork, 1.3 mgd project site have not yet been specified, they could include any or all the following: boat docks; a boat ramp; gravel parking for vehicles with trailers; a picnic area with tables and associated parking; restroom facilities, either septic tanks, composting, or storage-type; a defined or improved swimming area with an imported sand beach, but no lifeguard; a camping area; and hiking trails. The hiking trails would connect the different activity areas. The exact quantities of these facilities are also unknown at this time. However, they are anticipated to be less than or equal to the quantities of facilities projected for the War Fork and Steer Fork, 3.5 mgd alternative that were discussed in Section 3.2.6.2.1 of the DEIS. Any recreational development around the proposed War Fork and Steer Fork, 1.3 mgd reservoir would help to meet some of the recreation needs presented in Section 1.2.2, Recreation Needs, of the DEIS.

Impacts on the existing recreational uses at Turkey Foot Campground that would result from the construction and operation of the proposed War Fork and Steer Fork, 1.3 mgd dam and reservoir would be the same as those discussed in Section 3.2.6.2.1, War Fork and Steer Fork, of the DEIS. Please refer to that section for a discussion of these impacts.

Most of the land within the proposed War Fork and Steer Fork, 1.3 mgd impoundment area is USFS property, which would be no longer available for this use if this site is chosen as the final project location.

3.2.6.2.7 War Fork and Steer Fork, 2.2 mgd

The exact quantities, types, and locations of the proposed recreational facilities at the War Fork and Steer Fork, 2.2 mgd project site have not yet been specified, but the quantities of these facilities are anticipated to be less than or equal to those projected for the War Fork and Steer Fork, 3.5 mgd alternative that were discussed in Section 3.2.6.2.1 of the DEIS. These facilities could include any or all the following: boat docks; a boat ramp; gravel parking for vehicles with trailers; a picnic area with tables and associated parking; restroom facilities, either septic tanks, composting, or storage-type; a defined or improved swimming area with an imported sand beach, but no lifeguard; a camping area; and hiking trails. The hiking trails would connect the different activity areas. Any recreational development around the proposed War Fork and Steer Fork, 2.2

mgd reservoir would help to meet some of the recreation needs presented in Section 1.2.2, Recreation Needs, of the DEIS.

Impacts on the existing recreational uses at Turkey Foot Campground that would result from the construction and operation of the proposed War Fork and Steer Fork, 2.2 mgd dam and reservoir would be the same as those discussed in Section 3.2.6.2.1, War Fork and Steer Fork, of the DEIS. Please refer to that section for a discussion of these impacts.

Most of the land within the proposed War Fork and Steer Fork, 2.2 mgd impoundment area is USFS property, which would be no longer available for this use if this site is chosen as the final project location.

3.2.6.2.8 Wood Creek Lake Pipeline

As the proposed route for the water transmission pipeline from Wood Creek Lake would follow alongside existing roadways in the KDOT or County ROW, the impacts on area recreation would be limited. Construction activities could slow traffic and delay arrival at a recreation location, but this would be of a very limited time period, and have no significant impact.

In order to sustain usage of the existing recreational facilities that surround Wood Creek Lake, such as fixed boat docks and boat ramps, the maximum recommended withdrawal from Wood Creek Lake is estimated to be 10.00 mgd (Williams, 2000e). According to the reservoir yield analysis conducted for Wood Creek Lake, provided as Appendix R of this FEIS, in an average year, such a withdrawal would result in a lake-level fluctuation of 4 feet and a surface area of 616 acres. During critical drought years, such a withdrawal would result in a lake level fluctuation of 12 feet and a surface area of 506 acres (Kenvirons, 2000c).

The Wood Creek Water District currently withdraws and treats an approximate average of 4.00 mgd from Wood Creek Lake (Williams, 2000e). This average withdrawal results in a reservoir drawdown of one foot in an average year and a drawdown of three feet in a critical drought year. The resulting surface area of Wood Creek Lake in an average year is 667 acres. During a critical drought year, the surface area of the lake would be 637 acres (Kenvirons, 2000c).

If a pipeline capable of transporting 1.33 mgd from Wood Creek Lake to the JCWA distribution system were constructed, this would increase the average daily withdrawal from Wood Creek Lake to about 5.33 mgd. According to the yield analysis, such a withdrawal would result in a lake level fluctuation of between one and two feet in an average year, and a fluctuation of between three and five feet in a critical drought year (Kenvirons, 2000c). Since this fluctuation is below the recommended maximum for the protection of the existing recreation facilities at Wood Creek Lake, the Wood Creek Lake, 1.3 mgd pipeline alternative is not anticipated to significantly affect these existing uses of the reservoir. However, during critical drought years, it is possible that some fixed boat docks present around Wood Creek Lake may become unusable.

If a pipeline capable of transporting 2.19 mgd from Wood Creek Lake to the JCWA distribution system were constructed, this would increase the average daily withdrawal from Wood Creek Lake to about 6.19 mgd. According to the yield analysis, such a withdrawal would result in a

lake level fluctuation of slightly more than two feet in an average year, and a fluctuation of slightly more than five feet in a critical drought year (Kenvirons, 2000c). Since this fluctuation is below the recommended maximum for the protection of the existing recreation facilities at Wood Creek Lake, the Wood Creek Lake, 2.2 mgd pipeline alternative is not anticipated to significantly affect these existing uses of the reservoir. However, during critical drought years, it is possible that some fixed boat docks present around Wood Creek Lake may become unusable.

3.2.6.2.9 Lock 14 Pipeline

As the proposed route for the water transmission pipeline leading from Lock 14 of the Kentucky River would follow mostly alongside existing roadways in the KDOT or County ROW, impacts on area recreation would be limited. Construction could slow traffic and delay arrival at a recreation location. However, this would be of a very limited time period, and have no significant impact.

There are currently no recreational facilities located at Lock 14 of the Kentucky River. Thus, no impacts to current recreational uses of this water resource are expected to result from this project.

3.2.6.2.10 Summary of Impacts

The following table lists the potential impacts on recreation resulting from the additional alternatives investigated in this FEIS.

Table 3.2.6-3. Summary of Impacts on Recreation From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Short and long-term reduction of recreational opportunities within the project area and downstream; and • Increased recreational opportunities provided by the reservoir.	• Moderately Significant • Very Significant
War Fork and Steer Fork, 2.2 mgd	• Short and long-term reduction of recreational opportunities within the project area and downstream; and • Increased recreational opportunities provided by the reservoir.	• Moderately Significant • Very Significant
Wood Creek Lake Pipeline	• Short and long-term reduction of recreational opportunities along the pipeline route; • Affect current recreational opportunities at Wood Creek Lake; and • Continued recreation needs within Jackson County and the surrounding area.	• Insignificant • Moderately Significant • Very Significant
Lock 14 Pipeline	• Short and long-term reduction of recreational opportunities along the pipeline route; and • Continued recreation needs within Jackson County and the surrounding area.	• Insignificant • Very Significant

3.2.6.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.6.3, Mitigation, of the DEIS for a discussion of measures, which would reduce adverse impacts resulting from the project. All measures discussed in this section of the DEIS are applicable to the two smaller War Fork and Steer Fork alternatives evaluated in this FEIS.

3.2.7 CULTURAL RESOURCES

Section 3.2.7, Cultural Resources, of the DEIS defines cultural resources, and provides a discussion on Sections 106 and 110 of the National Historic Preservation Act (NHPA) and the National Register of Historic Places (NRHP). Refer to Section 3.2.7 of the DEIS for this information.

3.2.7.1 Affected Environment

Dam and Reservoir

No further archaeological survey work has been conducted on any of the proposed dam and reservoir sites since the publication of the DEIS. Please refer to Section 3.2.7.1, Affected Environment, of the DEIS for a discussion of the project areas surveyed during the preliminary archaeological survey conducted for the DEIS. This survey is provided in the DEIS as Appendix K, *An Archaeological Survey of Portions of War Fork/Steer Fork and Sturgeon Creek in Jackson County, Kentucky* (Bradbury et al., 1999).

Raw Water Transmission Main

No archaeological surveys have been conducted along any of the proposed routes for the water transmission main leading from either the proposed reservoir or from an existing source of surface water. As discussed in Section 3.2.7.1, Affected Environment, of the DEIS, all routes of the water transmission pipeline would follow mostly alongside existing roadways in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW). ROW for National Forest jurisdiction roads, and for portions of the proposed routes that would cross private lands would need to be obtained under certain alternatives. Widths of KDOT ROW were obtained for most major highways potentially affected by each alternative. The width of the ROW includes the width of the highway, shoulders, if present, and land running adjacent to the roadways on either side. Highways in Kentucky are approximately 20 feet wide, with little, if any, shoulder space (Jewell, 1999d).

3.2.7.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.7.1.1. War Fork and Steer Fork, of the DEIS for a discussion on the affected environment for this alternative.

3.2.7.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.7.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion on the affected environment for this alternative.

3.2.7.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.7.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion on the affected environment for this alternative.

3.2.7.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The boundaries of the proposed War Fork and Steer Fork, 1.3 mgd project site lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd site that was investigated in the DEIS. Available maps of the War Fork and Steer Fork, 3.5 mgd project area were examined to identify sites that might contain historic properties. None of these maps depicted historic properties within this project area (Bradbury et al., 1999).

At a normal pool elevation of 946 feet above MSL, the surface area of the impoundment at the War Fork and Steer Fork, 1.3 mgd site would be approximately 65 acres (Kenvirons, 2000b). The maximum potential flood level of a reservoir at this site would be at an elevation of about 966 feet above MSL, or about 20 feet above the normal pool elevation.

Shovel testing and pedestrian survey methods were used as site-discovery techniques during the survey of portions of the War Fork and Steer Fork, 3.5 mgd project area. Maps of the surveyed portions are provided in Appendix K of the DEIS. Since the pedestrian survey method is commonly used in areas that either exhibit good surface visibility and/or are located on slopes steeper than 20 percent, most of the areas surveyed by this method do not fall within the boundaries of the normal pool of the proposed War Fork and Steer Fork, 1.3 mgd reservoir. However, most the area surveyed by the shovel testing method does fall within the normal pool of the proposed War Fork and Steer Fork, 1.3 mgd reservoir.

Two basic topographic zones exist in this project area: valley bottoms and side slopes. The survey targeted a representative sample of both these zones. The valley bottoms are narrow, relatively flat areas situated adjacent to War Fork and Steer Fork creeks. Side slopes are situated adjacent to the valley bottoms and are steep. Numerous geological overhangs were observed on the side slopes; however, most exhibit extensive and intensive roof fall on the floor (Bradbury et al., 1999).

The remains of an old road, a linear depression with dirt mounded on either side, are present in several portions of the project area along the east bank of War Fork creek. During the early 1900s, the Turkeyfoot Railroad operated a logging operation in this area. There are no indications that the old road was associated with the Turkeyfoot Railroad. A primitive road is depicted on the 1937 Jackson County Highway and Transportation map, which may correspond to the old road (Bradbury et al., 1999).

Raw Water Transmission Main

The raw water transmission main leading from the pump station at the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run approximately 8.9 miles to the JCWA Treatment Plant. All but approximately one mile would follow alongside existing roadways, mostly in KDOT or County ROW. ROW would need to be obtained in the form of a Special Use Permit from the USFS for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners. The transmission main would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d).

Only two major highways would be affected along the proposed water transmission main route from the proposed War Fork and Steer Fork, 1.3 mgd reservoir site. These are KY 587 and KY 1071. The KDOT ROW width for KY 587 is 50 feet; that for KY 1071 is 40 feet (Jewell, 1999d).

3.2.7.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The boundaries of the proposed War Fork and Steer Fork, 2.2 mgd project site lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd site that was investigated in the DEIS. Available maps of the War Fork and Steer Fork, 3.5 mgd project area were examined to identify sites that might contain historic properties. None of these maps depicted historic properties within this project area (Bradbury et al., 1999).

At a normal pool elevation of 960 feet above MSL, the surface area of the impoundment at the War Fork and Steer Fork, 2.2 mgd site would be approximately 88 acres (Kenvirons, 2000b). The maximum potential flood level of a reservoir at this site would be at an elevation of about 980 feet above MSL, or about 20 feet above the normal pool elevation.

As discussed in Section 3.2.7.1.4 above, shovel testing and pedestrian survey methods were used as site-discovery techniques during the survey of portions of the War Fork and Steer Fork, 3.5 mgd project area. Maps of the surveyed portions are provided in Appendix K of the DEIS. Most of the areas surveyed by the pedestrian survey method do not fall within the boundaries of the normal pool of the proposed War Fork and Steer Fork, 2.2 mgd reservoir. However, nearly all of the area surveyed by the shovel testing method falls within the normal pool of the proposed War Fork and Steer Fork, 2.2 mgd reservoir.

The two basic topographic zones that exist in this project area are the same as those described for the War Fork and Steer Fork, 1.3 mgd project site. Refer to Section 3.2.7.1.4 above for this information.

The remains of an old road, a linear depression with dirt mounded on either side, are present in several portions of the project area along the east bank of War Fork creek. During the early 1900s, the Turkeyfoot Railroad operated a logging operation in this area. There are no indications that the old road was associated with the Turkeyfoot Railroad. A primitive road is depicted on the 1937 Jackson County Highway and Transportation map, which may correspond to the old road (Bradbury et al., 1999).

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route as that from the proposed War Fork and Steer Fork, 1.3 mgd reservoir discussed in Section 3.2.7.1.4 above. Only two major highways would be affected along this proposed route. These are KY 587 and KY 1071. The KDOT ROW width for KY 587 is 50 feet; that for KY 1071 is 40 feet (Jewell, 1999d).

3.2.7.1.6 Wood Creek Lake Pipeline

The water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road. The transmission main would run northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. The total distance that would be traveled by this pipeline would be 119,500 linear feet, or 22.6 miles (Kenvirons, 2000b).

The major highways that would be affected by the construction of a pipeline from Wood Creek Lake are US 25, KY 490, KY 30, and US 421. The KDOT ROW width for KY 30 is 50 feet; that for US 421 is 60 feet (Jewell, 1999d). It is assumed that the KDOT ROW widths for US 25 and KY 490 are between 40 and 60 feet, the typical range for highways in Kentucky.

3.2.7.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 towards Brandenburg Cemetery to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road towards Cressmont, veering south alongside Hale Ridge-Arvel Road towards Arvel. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 towards New Zion until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Under this option, the entire length of the

pipeline would follow alongside existing roadways in the KDOT or County ROW. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). The total distance that would be traveled by this pipeline would be approximately 108,000 linear feet, or 20.5 miles, to Tyner Lake.

The major highways that would be affected by the construction of a pipeline from Lock 14 of the Kentucky River are KY 399, KY 587, KY 1071, and potentially US 421. The KDOT ROW width for US 421 is 60 feet; that for KY 587 is 50 feet; and that for KY 1071 is 40 feet (Jewell, 1999d). It is assumed that the KDOT ROW width for KY 399 is between 40 and 60 feet, the typical range for highways in Kentucky.

3.2.7.2 Environmental Consequences

No changes have been made to the list of potential impacts on cultural resources resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.7.2, Environmental Consequences, of the DEIS for this list.

No further archaeological work has been conducted for this FEIS. In order to achieve compliance with Section 106 of the NHPA, a Memorandum of Agreement (MOA) would be developed and signed by the Kentucky Heritage Council (KHC), the Kentucky State Historic Preservation Officer (SHPO), and the Rural Utilities Service (RUS). This MOA would concern a phased identification approach for investigating the reservoir site, if a reservoir is chosen as the action to be taken. Examination of the proposed water transmission pipeline route, leading either from one of the proposed reservoirs or from an existing source of surface water, would likely be required to determine its archaeological potential, particularly in areas that diverge from existing KDOT or County ROW.

Dam and Reservoir

There are no changes to this section for the FEIS. Refer to Section 3.2.7.2, Environmental Consequences, Dam and Reservoir, of the DEIS for a discussion of the potential impacts on cultural resources that are common to all proposed dam and reservoir sites.

As discussed in Section 3.2.7.2, Environmental Consequences, of the DEIS, the proposed reservoir is an undertaking as defined by 36 Code of Federal Regulations (CFR) 800, Protection of Historic Properties. Inundating an area that contains historic properties would constitute an adverse effect on those properties. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

As stated in the DEIS, the archaeological survey conducted for the DEIS was a preliminary survey. It was conducted to identify historic properties within the surveyed portions of the proposed project areas and to determine the potential for significant historic properties to be

located within these areas. If a dam and reservoir alternative is chosen as the action to be taken, the chosen site would be subjected to additional archaeological investigation and analysis.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.7.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS for a discussion of potential impacts on cultural resources that are common to all proposed routes for the water main.

As stated in the DEIS, the proposed water transmission main is an undertaking as defined by 36 CFR 800, Protection of Historic Properties. Excavating and constructing on an area that contains historic properties would constitute an adverse effect on those properties. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

3.2.7.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to section 3.2.7.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts of this alternative on cultural resources.

3.2.7.2.2 Sturgeon Creek, 8.5 mgd

Dam and Reservoir

Based on comments received from the KHC and the Kentucky SHPO on the DEIS, the KHC and the Kentucky SHPO concur that archaeological sites 15Ja474 through 480 discovered during the preliminary archaeological survey, Appendix K of the DEIS, conducted on the Sturgeon Creek project sites are not eligible for listing in the NRHP, and warrant no further work. However, KHC and the Kentucky SHPO disagree with the evaluation of archeological site 15Ja473. It is the opinion of the KHC and Kentucky SHPO that this site is not eligible for listing in the NRHP and warrants no further work. The archaeological consultants who discovered archaeological site 15Ja473 note the presence of up to 140 centimeters of fine alluvial sediments in the immediate vicinity of the site, which could have the potential to contain intact deposits. In addition, the presence of fire-cracked rock (FCR) and the possibility of intake subplowzone features suggest that, at minimum, test excavations be conducted to determine if such deposits do exist at the site. Further investigation of this site would be decided in the MOA between RUS and the KHC.

There are no other changes to this section for the FEIS. Refer to Section 3.2.7.2.2, Sturgeon Creek, 8.5 mgd, Dam and Reservoir, of the DEIS for a discussion of the potential impacts of this alternative on cultural resources, and site-specific findings of the preliminary archaeological survey.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.7.2.2, Sturgeon Creek, 8.5 mgd, Raw Water Transmission Main, of the DEIS for a discussion of the potential impacts of this action on cultural resources.

3.2.7.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.7.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts of this alternative on cultural resources.

3.2.7.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.7.2.4, No Action, of the DEIS for a discussion of the potential impacts of this alternative on cultural resources.

3.2.7.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.7.2.5, Summary of Impacts, and Table 3.2.7-1, Summary of Impacts on Cultural Resources, of the DEIS.

The potential to adversely affect cultural resources from implementation of the Sturgeon Creek, 8.5 mgd or 3.5 mgd alternatives has not been given a different impact rating for this FEIS. The rating of this impact may change upon further archaeological work at either of these project sites, should either of these alternatives be chosen as the action to be taken.

3.2.7.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The boundaries of the proposed War Fork and Steer Fork, 1.3 mgd reservoir site lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd site that was investigated in the DEIS. Much of the area surveyed for the War Fork and Steer Fork, 3.5 mgd site also lies within the War Fork and Steer Fork, 1.3 mgd site. The non-site locality (identified as #1 in the survey, Appendix K of the DEIS) discovered within the surveyed portion of the proposed War Fork and Steer Fork, 3.5 mgd project area lies at an elevation of 980 feet above MSL (Bradbury et al., 1999). Since the normal pool level of the proposed War Fork and Steer Fork, 1.3 mgd reservoir lies at an elevation of about 946 feet above MSL, and the maximum potential flood level of this reservoir lies at an elevation of about 966 feet above MSL, this non-site locality lies outside the boundaries of the proposed reservoir at this site. In addition, cultural material recovered from this location were not of sufficient age (50 years or greater) to be considered an archaeological site.

As a result of the survey, no archaeological sites were documented in the proposed War Fork and Steer Fork project area (Bradbury et al., 1999). No sites eligible for, or already included in the

NRHP were identified in the surveyed portion of the project area. Of the numerous geological overhangs observed on the side slopes within the War Fork and Steer Fork project area, none were found to contain cultural material. There is a potential, although the probability is considered low, that overhangs situated in portions of the project area not sampled contain archaeological sites (Bradbury et al., 1999). However, most of these overhangs would be outside the normal pool boundary of the proposed War Fork and Steer Fork, 1.3 mgd reservoir.

The results of the survey suggest that if the proposed reservoir were constructed on the War Fork and Steer Fork, 1.3 mgd project site, there would be little, if any, adverse effect on historic properties. If this site is chosen as the final location for the proposed reservoir, the remaining areas within the project site may need to be surveyed. However, under the new regulations of the Advisory Council on Historic Preservation (ACHP) (36 CFR Part 800), it may be possible to argue that no further investigations or identification efforts are necessary for this site (Bradbury et al., 1999). Such a determination would need to be negotiated between the consultation parties, particularly the USFS and the Kentucky SHPO.

Raw Water Transmission Main

All but approximately one mile of the proposed route for the raw water transmission main leading from the War Fork and Steer Fork, 1.3 mgd reservoir site would run alongside existing roads. As this one mile area may not be previously-disturbed, there is greater potential for significant cultural resources to be located in this area of the proposed route. The remaining length of the proposed route would run alongside existing roadways, and therefore, would have a low probability of adversely impacting cultural resources.

3.2.7.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The boundaries of the proposed War Fork and Steer Fork, 2.2 mgd reservoir site lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd site that was investigated in the DEIS. Much of the area surveyed for the War Fork and Steer Fork, 3.5 mgd site also lies within the War Fork and Steer Fork, 2.2 mgd site. The non-site locality (identified as #1 in the survey, Appendix K of the DEIS) discovered within the surveyed portion of the proposed War Fork and Steer Fork, 3.5 mgd project area lies at an elevation of 980 feet above MSL (Bradbury et al., 1999). As discussed in Section 3.2.7.1.5 above, the normal pool level of the proposed War Fork and Steer Fork, 2.2 mgd reservoir lies at an elevation of about 960 feet above MSL, and the maximum potential flood level of this reservoir lies at an elevation of about 980 feet above MSL. Therefore, this non-site locality lies outside the normal pool boundaries of the proposed reservoir at this site, but lies just on the maximum extent of the flood level of this reservoir. However, cultural material recovered from this location were not of sufficient age (50 years or greater) to be considered an archaeological site.

As a result of the survey, no archaeological sites were documented in the proposed War Fork and Steer Fork project area (Bradbury et al., 1999). No sites eligible for, or already included in the NRHP were identified in the surveyed portion of the project area. Of the numerous geological

overhangs observed on the side slopes within the War Fork and Steer Fork project area, none were found to contain cultural material. There is a potential, although the probability is considered low, that overhangs situated in portions of the project area not sampled contain archaeological sites (Bradbury et al., 1999). However, most of these overhangs would be outside the normal pool boundary of the proposed War Fork and Steer Fork, 2.2 mgd reservoir.

The results of the survey suggest that if the proposed reservoir were constructed on the War Fork and Steer Fork, 2.2 mgd project site, there would be little, if any, adverse effect on historic properties. If this site is chosen as the final location for the proposed reservoir, the remaining areas within the project site may need to be surveyed. However, under the new regulations of the ACHP (36 CFR Part 800), it may be possible to argue that no further investigations or identification efforts are necessary for this site (Bradbury et al., 1999). Such a determination would need to be negotiated between the consultation parties, particularly the USFS and the Kentucky SHPO.

Raw Water Transmission Main

All but approximately one mile of the proposed route for the raw water transmission main leading from the War Fork and Steer Fork, 2.2 mgd reservoir site would run alongside existing roads. As this one mile area may not be previously-disturbed, there is greater potential for significant cultural resources to be located in this area of the proposed route. The remaining length of the proposed route would run alongside existing roadways, and therefore, would have a low probability of adversely impacting cultural resources.

3.2.7.2.8 Wood Creek Lake Pipeline

A cultural resources survey has not been completed on the proposed route for the water transmission pipeline connecting the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road to the existing JCWA 10-inch transmission main adjacent to US 421. Therefore, it is currently unknown whether cultural resources, including historic properties, exist along this route.

The entire length of the proposed route for the Wood Creek Lake water transmission pipeline, 119,500 linear feet, would follow alongside existing roadways in the KDOT or County ROW. Therefore, there is a low probability that cultural resources would be discovered along this route. This low probability would not be dependent on the capacity of the pipeline constructed along this route (1.33 mgd verses 2.19 mgd).

3.2.7.2.9 Lock 14 Pipeline

A cultural resources survey has not been completed on the proposed route for the water transmission pipeline leading from Lock 14 of the Kentucky River to the JCWA Treatment Plant. Therefore, it is currently unknown whether cultural resources, including historic properties, exist along this route.

As discussed in Section 3.2.7.1.5 above, there are two potential routes for the last segment of the water transmission pipeline leading from Lock 14. Under the first option, the entire length of the proposed route for the pipeline, 108,000 linear feet, would be alongside existing roadways in the KDOT or County ROW. Therefore, there is a low probability that cultural resources would be discovered along this route. This low probability would not be dependent on the capacity of the pipeline constructed along this route (1.33 mgd verses 2.19 mgd).

Under the second option, the last segment of the proposed route for the Lock 14 pipeline would travel cross-country to the JCWA Treatment Plant. There is a higher potential for cultural resources to be present in this cross-country stretch than within the road ROW. The remainder of the this proposed route, however, lies within the KDOT or County road ROW. The probability that cultural resources would be discovered along this route would be low. Potential impacts on cultural resources are not anticipated to differ based on capacity of the pipeline constructed (1.33 mgd verses 2.19 mgd).

3.2.7.2.10 Summary of Impacts

The following table lists the potential impacts on cultural resources resulting from the additional alternatives investigated in this FEIS.

Table 3.2.7-2. Summary of Impacts on Cultural Resources From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Adversely affect cultural resources from the site preparation, construction, operations, and connected actions associated with a dam, reservoir, and raw water transmission main.	• Insignificant
War Fork and Steer Fork, 2.2 mgd	• Adversely affect cultural resources from the site preparation, construction, operations, and connected actions associated with a dam, reservoir, and raw water transmission main.	• Insignificant
Wood Creek Lake Pipeline	• Adversely affect cultural resources from the construction and operations of a water transmission pipeline.	• Insignificant
Lock 14 Pipeline	• Adversely affect cultural resources from the construction and operations of a water transmission pipeline.	• Insignificant

3.2.7.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.7.3, Mitigation, of the DEIS for a discussion of mitigation measures which would reduce impacts to cultural resources potentially resulting from the project.

3.2.8 LAND USE

3.2.8.1 Affected Environment

There are no changes to this section for the FEIS. Refer to Section 3.2.8.1, Affected Environment, of the DEIS for information on the current planning infrastructure within Jackson County and the sources of information used in describing the affected environment for each of the alternatives.

3.2.8.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.8.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected environment for this alternative.

3.2.8.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.8.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.8.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.8.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.8.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The land surrounding the proposed War Fork and Steer Fork, 1.3 mgd project site consists primarily of undeveloped, rural forest. The U.S. Forest Service (USFS) administers and manages nearly all of the land slated for inundation under the proposed action, and a moderate infrastructure exists that serves those parcels (USFS, 1993). The surface area of the proposed reservoir at this site, up to normal pool level, would be about 65 acres, nearly all of which is part of the Daniel Boone National Forest (DBNF). A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 215 acres of land. Of these 215 acres, 192 acres are currently managed by the USFS; the remaining 23 acres are privately-owned (Kenvirons, 2000b).

Residential uses do not appear to be present in the normal pool area of the proposed reservoir at the War Fork and Steer Fork, 1.3 mgd site. In the surrounding vicinity of the proposed reservoir site, scattered rural residential and agricultural uses appear to exist (USGS, 1995). Extending out

from the reservoir site, rural residential uses continue, eventually reaching the county seat of McKee.

Up to an additional 18 to 20 acres would be required for construction staging, new road construction, and a material layout area at the War Fork and Steer Fork, 1.3 mgd project site (Kenvirons, 1999c). Of these additional acres, construction of the new road needed to access the project site would require about three to five acres. This acreage can be added to the total area affected by inundation to arrive at the total affected area of land for the project at this site.

As stated previously, the land within the normal pool area of the proposed reservoir is predominantly National Forest. This land is currently managed by the USFS, with an emphasis on wildlife habitat and timber management. The USFS does not employ a classification of 'prime forestland' within the boundaries of the DBNF (Strojan, 1999c). Thus, the percentage of land classified in this category is not available. The private holdings within this area are undeveloped and open. Within the proposed reservoir maximum flood and buffer areas, rural residential and forested areas exist as the predominant land uses. No homes exist within the normal pool, maximum flood, and buffer areas. A small amount of prime farmland soils, less than or equal to the approximately 27.5 acres described for the War Fork and Steer Fork, 3.5 mgd reservoir area in the DEIS, exist within the proposed War Fork and Steer Fork, 1.3 mgd impoundment area, up to normal pool elevation. All of these prime farmland soils are of soil type Gs (refer to **Table 3.2.1-3** in Section 3.2.1 of this FEIS). While this soil type is classified as prime farmland by the NRCS, since it is currently public land within the DBNF, it cannot be considered as prime farmland (NRCS, 1989).

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run approximately 8.9 miles to the Jackson County Water Association (JCWA) Treatment Plant. All but approximately one mile would follow alongside existing roadways, mostly in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW). ROW would need to be obtained in the form of a Special Use Permit from the USFS for National Forest jurisdiction roads F.S. 3109 Turkey Foot Road. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners. The transmission main would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the water main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d).

3.2.8.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The land surrounding the proposed War Fork and Steer Fork, 2.2 mgd project site consists primarily of undeveloped, rural forest. The USFS administers and manages nearly all of the land

slated for inundation under the proposed action, and a moderate infrastructure exists that serves those parcels (USFS, 1993). The surface area of the proposed reservoir at this site, up to normal pool level, would be about 88 acres, nearly all of which is part of the DBNF. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 275 acres of land. Of these 275 acres, 244 acres are currently managed by the USFS; the remaining 31 acres are privately-owned (Kenvirons, 2000b).

A small amount of prime farmland soils, less than or equal to the approximately 27.5 acres described for the War Fork and Steer Fork, 3.5 mgd reservoir area in the DEIS, exist within the proposed War Fork and Steer Fork, 2.2 mgd impoundment area, up to normal pool elevation. All of these prime farmland soils are of soil type Gs (refer to **Table 3.2.1-3** in Section 3.2.1 of this FEIS). While this soil type is classified as prime farmland by the NRCS, since it is currently public land within the DBNF, it cannot be considered as prime farmland (NRCS, 1989).

The boundaries of the War Fork and Steer Fork, 1.3 mgd project site discussed in Section 3.2.8.1.5 above lie completely within those of the War Fork and Steer Fork, 2.2 mgd site. Therefore, the discussion of the affected environment provided in Section 3.2.8.1.5 is applicable to this alternative. Please refer to that section for this information.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route as that from the War Fork and Steer Fork, 1.3 mgd reservoir, described in Section 3.2.8.1.5 above. Please refer to that section for this information.

3.2.8.1.6 Wood Creek Lake Pipeline

Under this alternative, a water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main leading from Wood Creek Lake in northern Laurel County to the JCWA 10-inch main located south of the JCWA Treatment Plant. The total distance that would be traveled by this pipeline is 119,500 linear feet, or 22.6 miles (Kenvirons, 2000b). The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road, running northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main.

All land surrounding Wood Creek Lake is privately-owned and primarily residential. Surrounding development consists of homes and subdivisions.

3.2.8.1.7 Lock 14 Pipeline

Under this alternative, a raw water transmission pipeline would be constructed from Lock 14 of the Kentucky River near Heidelberg to the JCWA Treatment Plant. The total distance that would be traveled by this pipeline is 108,000 linear feet, or 20.5 miles (Kenvirons, 2000b).

From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 towards Brandenburg Cemetery to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road towards Cressmont, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Under this option, the entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c).

3.2.8.2 Environmental Consequences

No changes have been made to the list of potential impacts on land use resulting from each of the alternatives for this FEIS. Refer to Section 3.2.8.2, Environmental Consequences, of the DEIS for this list.

As in the DEIS, potential impacts on land use were derived from evaluating features of the proposed action that would change current land uses and/or land ownerships within the project areas and by determining the effects current and potential future land uses may have on the operations at the reservoir.

There are no other changes to this section for the FEIS. Refer to Section 3.2.8.2, Environmental Consequences, of the DEIS for a discussion of the potential impacts on land use common to all dam and reservoir alternatives.

3.2.8.2.1 War Fork and Steer Fork

As discussed in Section 2.4.1.5, Connected Actions, of this FEIS, in order for the project to proceed at this site, either a land exchange with the USFS would have to be conducted, or a Special Use Permit (SUP) issued by the USFS, or a combination of these two actions. The USFS may maintain management of the land under the proposed reservoir and within the proposed buffer zone surrounding the reservoir. Under this option, the Jackson County Empowerment Zone (EZ) Community would need to acquire the portion of the buffer zone that is currently privately-owned. Via a land exchange with the USFS, the Jackson County EZ Community could exchange an equal portion of this newly-acquired land for the land taken up by the proposed dam and appurtenant structures. The remainder of the privately-held portion of the buffer zone may

be donated to the USFS, for their management. Under this option, an SUP would be acquired by the Jackson County EZ Community for the proposed reservoir, and potentially for the associated recreation facilities. An environmental assessment (EA) would have to be conducted by the USFS to determine the impacts of the proposal prior to issuance of the SUP. A separate NEPA analysis would also have to be prepared by the USFS on any land exchange necessary for this alternative. This EA would evaluate the environmental impacts of the various options for the land exchange. In conjunction with the EA, the USFS or a third party would conduct a biological evaluation (BE) to assess the impact of the exchange on threatened, endangered, and sensitive species (Bennett, 1999). Simultaneously, formal consultation would be carried out with the U.S. Fish and Wildlife Service (USFWS).

A final option may not require a land exchange at all. Although the Jackson County EZ Community would likely still have to acquire the portion of the buffer zone that is currently privately-owned, an SUP to construct, operate, and maintain a dam and reservoir could be obtained from the USFS. As stated above, an EA would have to be conducted prior to USFS issuance of the SUP.

As discussed in Section 3.2.1.1.1 of this FEIS, although prime farmland soils, as classified by the NRCS, are present on the proposed War Fork and Steer Fork, 3.5 mgd project site, since it is currently public land within the DBNF, it cannot be considered as prime farmland (NRCS, 1989). However, if the War Fork and Steer Fork, 3.5 mgd site is chosen as the final project location in the Record of Decision (ROD), and a land exchange is conducted, the land within the project area may or may not remain public land. If it does not remain public land, these prime farmland soils would then be concerned prime farmland. Impacts to these soils would be analyzed in the EA that would be conducted for the land exchange. Issuance of a SUP for this land would not change the management of the land; the land would remain public land.

There are no other changes to this section for the FEIS. Refer to Section 3.2.8.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts on land use that would result from this alternative.

3.2.8.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.8.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential impacts on land use that would result from this alternative.

3.2.8.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.8.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts on land use that would result from this alternative.

3.2.8.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.8.2.4, No Action, of the DEIS for a discussion of the potential impacts on land use that would result from this alternative.

3.2.8.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Refer to Section 3.2.8.2.5, Summary of Impacts, and Table 3.2.8-2, Summary of Impacts on Land Use, of the DEIS.

3.2.8.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The proposed action would have moderate consequences for land use in the War Fork and Steer Fork, 1.3 mgd project area. The use of the proposed impoundment area would change from a natural forest to a recreation and water supply reservoir. Previously present flora and fauna habitat would be replaced by those unique to an aquatic regime. The changes in land use due to the project are straightforward; however, the associated biotic changes are more complex. These changes are discussed in Sections 3.2.2, Surface and Groundwater Resources, and 3.2.4, Biological Resources, of the DEIS.

There are no households currently living on the proposed War Fork and Steer Fork, 1.3 mgd project site, including the maximum flood and buffer areas (Schmitt, 1999f). Privately-owned land within the 300-foot buffer zone surrounding the proposed reservoir would convert to open space to preserve water quality of the reservoir. This privately-owned land would remain undeveloped through restrictive easements and permitted use agreements. Existing residential and agricultural uses outside the buffer would likely remain, with a potential for increased residential development. The area could be an attractive development option for those seeking to build on property with views of the new reservoir. Due to the large amount of USFS holdings around War Fork, this potential area for development would be limited to a small number of possible building sites.

The environmental impacts of developing the reservoir would be minimized through the use of such a buffer. Restricting uses to open-space related uses would prevent human-induced impacts relating to building, construction, and presence of sanitary waste facilities, such as septic tanks. Terrestrial flora and fauna habitat would be encouraged in these open space areas, allowing them to remain and potentially increase due to the lack of human settlement. These ecological and human impacts of the buffer are further discussed in Sections 3.2.4, Biological Resources, and 3.2.11, Human Health and Safety, respectively, of the DEIS.

Of the approximately 215 acres of the land within the maximum flood level of the proposed reservoir at this site, with a 300-foot buffer zone extending from normal pool level, about 192 acres are currently managed by the USFS; 23 acres are privately-owned (Kenvirons, 2000b). If the project were to proceed at the War Fork and Steer Fork, 1.3 mgd site, a land exchange with the USFS might be necessary for all or portions of the site that would be affected by construction

and operation of the proposed dam and reservoir. This land exchange is discussed in detail in Section 3.2.8.2.1, War Fork and Steer Fork, of the DEIS and this FEIS. Please refer to these sections for more information. Required as part of an exchange, the USFS would prepare an EA under NEPA. Alternately, the USFS may issue an SUP to construct, operate, and maintain the proposed dam and reservoir at this site. Under this option, a land exchange may not be necessary, however, the Jackson County EZ Community would still need to acquire the privately-owned land within the project area. Prior to issuance of the SUP, the USFS would have to conduct an EA to determine the impacts of the proposal.

If the project were to proceed in the War Fork area, altered land uses of both forest and private lands would result. The land under the proposed impoundment area would be inundated, resulting in various ecological impacts throughout the normal pool area. The land classification would change; however, the use would remain a natural state. Recreation uses around the lake would be localized, probably remaining categorized as open space.

Former privately-owned land could undergo the most change in use, transforming from agricultural or residential land to natural open space. Some parcels purchased and exchanged may already be categorized as forest or other open space. In this case, the type of open space would change, not necessarily the use of the land. Changes from residential or agricultural uses to forested land would be ecologically significant. Formerly cropped land would require tree planting if a forested use is preferred by the USFS. Flora and fauna would change from species adapted to open fields to those requiring a closed-forested ecosystem. The change from residential to forested land would require the relocation of homes to alternate sites.

As discussed in Section 3.2.1.1.4 of this FEIS, although prime farmland soils, as classified by the NRCS, are present on the proposed War Fork and Steer Fork, 1.3 mgd project site, since it is currently public land within the DBNF, it cannot be considered as prime farmland (NRCS, 1989). However, if the War Fork and Steer Fork, 1.3 mgd site is chosen as the final project location in the ROD, and a land exchange is conducted, the land within the project area may or may not remain public land. If it does not remain public land, these prime farmland soils would then be concerned prime farmland. Impacts to these soils would be analyzed in the EA that would be conducted for the land exchange. Issuance of a SUP for this land would not change the management of the land; the land would remain public land.

Through a land exchange, the amount of open space within Jackson County would most likely be increased. The former private land would probably transition to open space to be managed in a manner similar to adjacent Federal land holdings. Most likely, the effects would not significantly impact the overall land use patterns of the County. Without a comprehensive plan, it is hard to predict where these units might move or what their long-term effects would be.

Raw Water Transmission Main

Construction of the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would result in temporary disturbance of the land adjacent to the roadways. Although residents would still retain access to their parcels, it may be more difficult due to construction in the ROW adjacent to their property. Rural residential and agricultural land

may be affected by construction, but those uses would remain during and after project completion. Construction over the last mile of the proposed route, which passes through agricultural and forested land near the proposed reservoir site, would not contribute to changes in long-term land use. Construction would have only temporary effects.

3.2.8.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

Impacts on land use potentially resulting from implementation of the project at the proposed War Fork and Steer Fork, 2.2 mgd project site would be the same as those discussed for the War Fork and Steer Fork, 1.3 mgd site in Section 3.2.8.2.6 above. Please refer to that section for a discussion of these potential impacts.

Of the approximately 275 acres of the land within the maximum flood level of the proposed reservoir at this site, with a 300-foot buffer zone extending from normal pool level, about 244 acres are currently managed by the USFS; 31 acres are privately-owned (Kenvirons, 2000b). There are no households currently living on the proposed War Fork and Steer Fork, 2.2 mgd project site, including the maximum flood and buffer areas (Schmitt, 1999f).

Raw Water Transmission Main

Potential impacts associated with the construction of a raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir site would be the same as those discussed in Section 3.2.8.2.6 above. Refer to that section for this discussion.

3.2.8.2.8 Wood Creek Lake Pipeline

Construction of a water transmission pipeline connecting the existing Wood Creek Water District water distribution system to the existing JCWA water distribution system would result in temporary disturbance of land and land uses adjacent to the affected roadways. Although residents would still retain access to their parcels, it may be more difficult due to construction in the ROW adjacent to their property. Rural residential and agricultural land may be affected by construction, but those uses would remain during and after project completion. Construction of the transmission pipeline would have only temporary effects, and these impacts are anticipated to be the same regardless of the capacity of the pipeline constructed (1.33 mgd verses 2.19 mgd).

3.2.8.2.9 Lock 14 Pipeline

Construction of a water transmission pipeline from Lock 14 of the Kentucky River to the JCWA Treatment Plant would result in the same temporary impacts on land use as discussed in Section 3.2.8.2.8 above for the Wood Creek Lake pipeline. Refer to that section for a discussion of these potential impacts.

3.2.8.2.10 Summary of Impacts

The following table lists the potential impacts on land use resulting from the additional alternatives investigated in this FEIS.

Table 3.2.8-3. Summary of Impacts on Land Use Form Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Permanent direct displacement or alteration of existing land uses; • Permanent land use changes resulting from economic or socioeconomic forces; • Temporary effects on localized land uses; • Adverse effects of current land uses on environmental conditions in or surrounding the reservoir; and • Conflicts involving land ownership or easements.	• Moderately Significant • Insignificant • Insignificant • Insignificant • Moderately Significant
War Fork and Steer Fork, 2.2 mgd	• Permanent direct displacement or alteration of existing land uses; • Permanent land use changes resulting from economic or socioeconomic forces; • Temporary effects on localized land uses; • Adverse effects of current land uses on environmental conditions in or surrounding the reservoir; and • Conflicts involving land ownership or easements.	• Moderately Significant • Insignificant • Insignificant • Insignificant • Moderately Significant
Wood Creek Lake Pipeline	• Permanent direct displacement or alteration of existing land uses; • Permanent land use changes resulting from economic or socioeconomic forces; and • Temporary effects on localized land uses.	• Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Permanent direct displacement or alteration of existing land uses; • Permanent land use changes resulting from economic or socioeconomic forces; and • Temporary effects on localized land uses.	• Insignificant • Insignificant • Insignificant

In some cases, impacts on land use are incremental. Although given the same impact ratings at each of the alternative sites, there are differences between impacts at each site. These differences are discussed in Sections 3.2.8.2.6 through 3.2.8.2.9. Some impacts on land use would be slightly greater at the War Fork and Steer Fork, 1.3 mgd project site than at the War Fork and Steer Fork, 2.2 mgd site, due to the slightly larger project area affected. Impacts on land use resulting from the dam and reservoir alternatives would be much greater than those resulting from either of the pipeline alternatives. These variations, however, would not change

the impact ratings listed in the above table. Of the two pipeline alternatives, potential impacts on land use would not be dependent on the capacity of the pipeline constructed.

3.2.8.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.8.3, Mitigation, of the DEIS for a discussion of measures which would minimize potential impacts on land use resulting from the proposed action.

3.2.9 TRANSPORTATION

Section 3.2.9, Transportation, of the DEIS defines and discusses roadway capacity, traffic volumes, and roadway levels of service (LOS). Please refer to this section of the DEIS for this information.

3.2.9.1 Affected Environment

Section 3.2.9.1, Affected Environment, of the DEIS provides a description of the current road network within Jackson County, as well as the existing LOS ratings and estimated traffic volumes on road segments potentially affected by the proposed action. It should be noted that the discussion and associated data tables presented in this section of the DEIS relate to the proposed dam and reservoir sites only. Some of the same roadways that would be affected by the construction and operation of the proposed reservoir would also be affected by the construction of the Wood Creek Lake and Lock 14 pipelines. As noted in the DEIS, the road segments that were analyzed were chosen to represent the most likely location of the highest volume of traffic for a given highway and proposed reservoir site, and represent the worst-case scenario for evaluation of impacts on transportation.

There are no other changes to this section for the FEIS. Refer to Section 3.2.9.1, Affected Environment, of the DEIS for a discussion of the affected environment common to all proposed project sites.

3.2.9.1.1 War Fork and Steer Fork

It was incorrectly noted in the DEIS that road #3109, which would have segments inundated by the proposed War Fork and Steer Fork, 3.5 mgd reservoir, is a County road. F.S. 3109 is a USFS road for which the USFS has jurisdiction and maintenance responsibilities. There are no other changes to this section for the FEIS. Refer to Section 3.2.9.1.1, War Fork and Steer Fork, of the DEIS for a discussion on the affected environment for this alternative.

3.2.9.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.9.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion on the affected environment for this alternative.

3.2.9.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.9.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion on the affected environment for this alternative.

3.2.9.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The land surrounding the proposed War Fork and Steer Fork, 1.3 mgd project site consists primarily of undeveloped, rural forest. The U.S. Forest Service (USFS) manages nearly all of the land within the proposed project area, and a moderate infrastructure exists that serves those parcels (USFS, 1993). Approximately 65 acres of USFS and private land lies within the normal pool level of the proposed reservoir. The total acreage for a reservoir at maximum flood level at the War Fork and Steer Fork, 1.3 mgd site, with a 300-foot buffer extending from normal pool level, would be about 215 acres of land (Kenvirons, 2000b).

Two State and one Federal highways provide access to the War Fork area. KY 587 and KY 89 both provide direct access to neighboring counties to the north and south of Jackson County. US 421 is a main thoroughfare, providing access to the major north-south freeway through Kentucky, leading to Lexington and into Tennessee. US 421 can also be used as a west-south route, as it provides service to neighboring counties not utilizing the freeway system. USFS roads are unimproved and gravel in some cases, while local roads are paved with curvy and slow conditions. Various minor gravel access roads to existing USFS sites would also be inundated.

According to USFS records of roads within the War Fork region, F.S. Road 3109 would have segments inundated by the proposed reservoir. Currently, #3109 is single-lane and unimproved (USFS, 1993). This road allows the USFS to access their parcels for research and maintenance purposes. This road would be inundated only on specific reaches of its length, part of which is County-maintained. The road is classified under the USFS classification system for its LOS, and it has a LOS D. The USFS defines a LOS D of having a slow flow, easily blocked by any activity and requiring backing up to pass (USFS, 1986). The road is designed for a single use, can be difficult to negotiate, and has intermittent volumes of traffic.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run approximately 8.9 miles to the JCWA Treatment Plant (Kenvirons, 2000b). All but approximately one mile would follow alongside existing roadways, mostly in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW). Two roads along which the water transmission main would follow, F.S. Road 3109 and Turkey Foot Road (F.S. 4), are National Forest jurisdiction roads. ROW along these roads for construction and operation of the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would be required in the form of an SUP from the USFS. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners.

The transmission main would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this

road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d).

3.2.9.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The land surrounding the proposed War Fork and Steer Fork, 2.2 mgd project site consists primarily of undeveloped, rural forest. The USFS manages nearly all of the land within the proposed project area, and a moderate infrastructure exists that serves those parcels (USFS, 1993). Approximately 88 acres of USFS and private land lies within the normal pool level of the proposed reservoir. The total acreage for a reservoir at maximum flood level at the War Fork and Steer Fork, 2.2 mgd site, with a 300-foot buffer extending from normal pool level, would be about 275 acres of land (Kenvirons, 2000b).

The boundaries of the War Fork and Steer Fork, 1.3 mgd project site lie completely within those of the War Fork and Steer Fork, 2.2 mgd project site. Therefore, access to the War Fork and Steer Fork, 2.2 mgd site would be the same as that described in Section 3.2.9.1.4 above. F.S. Road 3109 would also have segments inundated by the proposed reservoir at this site. Refer to Section 3.2.9.1.4 above for more information on this road.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route described for the War Fork and Steer Fork, 1.3 mgd transmission main in Section 3.2.9.1.4 above.

3.2.9.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main leading from Wood Creek Lake in northern Laurel County to the JCWA 10-inch main located south of the JCWA Treatment Plant. The total distance that would be traveled by this pipeline is 119,500 linear feet, or 22.6 miles (Kenvirons, 2000b). The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road, running northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main.

3.2.9.1.7 Lock 14 Pipeline

The raw water transmission main leading from Lock 14 of the Kentucky River at Heidelberg would travel about 108,000 linear feet, or 20.5 miles, to the JCWA Treatment Plant at Tyner Lake (Kenvirons, 2000b). From Lock 14 at Heidelberg, the transmission main would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Under this option, the entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c).

3.2.9.2 Environmental Consequences

No changes have been made to the list of potential impacts on transportation resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.9.2, Environmental Consequences, of the DEIS for this list.

As in the DEIS, impacts on transportation and traffic were derived from evaluating features of the proposed action that would affect these issues, from investigating the current status of roads and traffic in the project area, and from predicting changes to current conditions as a result of the project. There are no changes to this section for the FEIS. Refer to Section 3.2.9.2, Environmental Consequences, of the DEIS for a further discussion of the method used to evaluate transportation and traffic impacts due to the proposed action.

Dam and Reservoir

As in the DEIS, the impacts on transportation and traffic forecasted for the construction and operation phases of the proposed action were assumed to be independent of each other. For the purposes of the transportation analysis for the additional dam and reservoir alternatives investigated in this FEIS, the operational impacts remain forecasted for the year 2005. Construction impacts remain forecasted for the year 2003.

In the DEIS, construction impacts are assumed to be limited to the hauling phase for construction materials. This is assumed as a 90-day period with hauling occurring for five days a week during this period. Thus, an estimate of 60 days was used in distributing the trips over the construction period. These same assumptions are used for the transportation analysis of the additional dam and reservoir alternatives investigated in this FEIS. Estimated average daily traffic (ADT) ratings for each affected road segment at the two additional War Fork and Steer Fork project sites were calculated by projecting 2003 ADT estimates from the 1999 ADT estimates (shown in Table 3.2.9-2, Existing Levels of Service (LOS) and Estimated Traffic Volumes for Road

Segments Potentially Affected by the Proposed Action, of the DEIS) and adding the projected number of truck hauling trips per day to the project site.

Section 3.2.9.2, Environmental Consequences, of the DEIS presents a range of recreation facility sizes for each proposed project area evaluated in the DEIS, and the associated traffic volumes generated by these areas, using the most accurate generation rates for either regional or county parks. A county park designation is used for the War Fork and Steer Fork, 3.5 mgd project site evaluated in the DEIS, which shows the greatest propensity for high volumes on Saturdays. For the purposes of this analysis, the same designation is assumed for the two smaller War Fork and Steer Fork alternatives (1.3 mgd and 2.2 mgd) evaluated in this FEIS. The peak volumes on Saturdays and Sundays are assumed to be distributed on various highways throughout the region, as people visiting the reservoir would come from various places and use multiple different highways. As the sizes and other specifications of the recreational facilities surrounding the additional War Fork and Steer Fork alternatives investigated in this FEIS are unknown at this time, they were assumed, for the purposes of this analysis, to be less than or equal to those described for the War Fork and Steer Fork, 3.5 mgd in the DEIS. Therefore, the anticipated traffic generation at the proposed recreational facilities associated with these additional War Fork and Steer Fork reservoir alternatives is assumed to be less than or equal to that projected for the War Fork and Steer Fork, 3.5 mgd in Table 3.2.9-4, Anticipated Traffic Generation of the Proposed Recreation Facilities by Location and Size (Number of Trips), presented in the DEIS.

As noted in the DEIS, when comparing the estimates for parking at the proposed recreation facilities to the anticipated traffic volumes generated by the proposed reservoir, discrepancies arise. Traffic generation rates estimate volumes based upon facility size in acres. These volumes fluctuate according to the day of travel and are also affected by the type of facility designated. However, parking facilities and traffic volumes are not forecast using the same standard. Parking facilities do not correspond with the acreage of the proposed location. An increase in acreage of a proposed location does not necessarily equal more parking like it would more traffic. Instead, parking standards fit the specific recreation facility size, not the size of the proposed reservoir. Changes in the facility size can result in a more scattered distribution over the entire location rather than only an increased density in services.

Raw Water Transmission Main

There are no changes to this section for the FEIS. Refer to Section 3.2.9.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS for a discussion of the impacts on transportation and traffic due to construction and operation of the water transmission main common to alternatives.

3.2.9.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.9.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts on transportation resulting from this alternative.

3.2.9.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.9.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential impacts on transportation resulting from this alternative.

3.2.9.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.9.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts on transportation resulting from this alternative.

3.2.9.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.9.2.4, No Action, of the DEIS for a discussion of the potential impacts on transportation resulting from this alternative.

3.2.9.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.9.2.5, Summary of Impacts, and Table 3.2.9-11, Summary of Impacts on Transportation, of the DEIS.

3.2.9.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The transportation network in the immediate area of the proposed War Fork and Steer Fork, 1.3 mgd project site is relatively small, comprised of USFS, State, and County roads. State highways border the area on the east, while County and USFS roads bisect the proposed reservoir and form the northern border to the region. LOS level changes and relocation of roads would be minimal due to the construction of a dam and reservoir at this site, with the primary concern on load-bearing stresses on the roads.

The LOS ratings on the major roads surrounding the proposed War Fork and Steer Fork, 1.3 mgd project site may be affected slightly by the hauling of construction materials. However, it is difficult to ascertain the exact impact of increased numbers of trucks on the curvy and narrow highways. Although the traffic volumes would not significantly increase, the presence of more trucks would slow traffic. As the anticipated total number of truck trips needed for hauling of materials to this site would be about 3,710 trips, slightly more than 60 truck trips per day would be added throughout the network of roads surrounding the project site. This is merely a predicted volume, not addressing the feasibility of the number of trucks needed to make these trips. If hauling were performed by one truck returning to the site rather than multiple trucks completing the trips, slow traffic might be more easily avoided. One truck repeating its trip throughout the day would result in a lower percentage of heavy-vehicles in the traffic flow than if multiple trucks caravan or make multiple trips at the same times throughout the day. The

percentage of heavy vehicles in traffic helps determine the overall LOS rating of the roadway segment due to slowed conditions.

As mentioned in Section 2.4.1.2.4 of this FEIS, the approximate number of truckloads of each raw material that would be needed for the dam at the proposed War Fork and Steer Fork, 1.3 mgd site are: 450 truckloads of cement; 1,030 truckloads of sand; and 2,230 truckloads of gravel. Trucks importing cement to the project site are anticipated to primarily utilize US 421 and KY 89. Trucks carrying sand to the site are expected to utilize either US 421 or KY 587 for hauling. Gravel hauling is anticipated to primarily occur on US 421 and KY 30.

Increased numbers of construction-related truck trips for the hauling of construction materials would affect the LOS ratings on the roadways surrounding the War Fork and Steer Fork, 1.3 mgd project site. Construction-related traffic would not pose a significant impact to this region, as many of the highways surrounding the site are not the proposed hauling routes for construction materials. As shown in **Table 3.2.9-12**, LOS levels on roads anticipated to be used for hauling would be minimally affected, still allowing relatively unimpeded flow of traffic around the proposed War Fork and Steer Fork, 1.3 mgd project site.

Table 3.2.9-12. Anticipated Road Network Levels of Service (LOS) and Traffic Volumes Due to Construction at the Proposed War Fork and Steer Fork, 1.3 mgd Site

Roadway	Segment	Anticipated ADT (2003)	Peak Hour Volume (p.m.)	LOS	Current LOS
KY 89	New School Road to Bradshaw-Macedonia Road	1,132	113	B	B
US 421	Begley Road to KY 1071	3,800	380	C	C
KY 587	US 421 to Huff School Road	1,553	155	B	B

The risk of traffic accidents on the roads surrounding the proposed War Fork and Steer Fork, 1.3 mgd site depends upon several factors, including the existing number of heavy vehicles using each road segment, LOS rating of the road segment, and additional construction-related traffic generated. Within the War Fork region, the percentage of heavy vehicles currently using the road network averages nine percent (Jewell, 1999b). Factoring in the truck trips needed for hauling materials for construction would increase the number of trucks on the roadways significantly. However, this increased presence of trucks on the road would not necessarily translate to higher accident rates with other vehicles. As stated above, the LOS ratings would remain good to excellent on the highways around the proposed War Fork and Steer Fork, 1.3 mgd project site after the additional construction truck trips have been factored in. As long as drivers on the highways respect the speed and following distance for other vehicles carrying loads, accident rates should not increase.

One USFS road, F.S. 3109, on the War Fork and Steer Fork, 1.3 mgd project site would be inundated by the proposed reservoir. The specific portion of F.S. 3109 that would be affected consists of a stretch classified as improved and County-maintained. This portion is at the southern end of the road, and it comes to a terminus within USFS land. This road is shown in Figure 3.2.9-3 of the DEIS. Flooding this road would not cut off or impede traffic on any other

roads. Various minor gravel access roads would be inundated, and the roads still serving USFS parcels after inundation would need to be replaced (Strojan, 1999a). It is difficult to know at this time which lands would be held by the USFS after the dam and reservoir construction and the possible associated land exchange occur with Jackson County. Details on this potential land exchange are provided in Section 2.4.1.5, Connected Actions, of this FEIS. If the land for the reservoir were acquired, and former USFS service roads began servicing private parcels, maintenance and construction responsibilities would then be turned over to the County or State.

As shown in Table 3.2.9-2 of the DEIS, the LOS ratings for the State highways surrounding the proposed War Fork and Steer Fork, 1.3 mgd project site are currently adequate. The highways sustain a LOS level allowing traffic to flow relatively unimpeded on the narrow and curvy roads of the area. Under the operational phase of the proposed action, recreational traffic at the proposed reservoir at the War Fork and Steer Fork, 1.3 mgd site would also be accommodated at a reasonable LOS level on these State highways, regardless of the size of the recreational facilities. The anticipated traffic volumes and associated peak hour volumes (p.m.), by recreational facility size, for the roads surrounding the proposed War Fork and Steer Fork, 1.3 mgd reservoir, during the operational phase of the proposed reservoir, would be less than or equal to those presented in Table 3.2.9-6, Anticipated Road Network Levels of Service (LOS) and Traffic Volumes at the Proposed Recreational Facilities at the War Fork and Steer Fork Site, of the DEIS. The highways described in this table (KY 89, US 421, and KY 587) would serve as the primary means of accessing the local roads near the proposed War Fork and Steer Fork reservoir for the population inside and outside of Jackson County. The State highways would allow people from neighboring counties within the region to easily access the site. The proposed dam site would be accessed using Turkey Foot Road and a newly-constructed road adjacent to the proposed reservoir (Kenvirons, 1999c). It is assumed that this road would also be used to access the primary recreational facilities.

The traffic generated by the proposed recreation facilities at the War Fork and Steer Fork, 1.3 mgd site would not result in a decreased LOS ratings for the roads within Jackson County. Expected traffic volumes on both weekdays and weekends would not be great enough to cause significant changes or slows in traffic movement. Volumes on weekend days would differ little from those anticipated during the week. In addition, on weekend days, peak hour traffic traditionally present during the week would not occur. Thus, the lack of peak hour traffic on Saturdays and Sundays would prevent any slowing from additional recreational traffic.

Parking facilities would be located on-site for the visitors of the proposed reservoir. Although the exact number of parking spots for visitors that would be provided at the War Fork and Steer Fork, 1.3 mgd reservoir is currently unknown, it is assumed to be less than or equal to the 80 spots projected for the War Fork and Steer Fork, 3.5 mgd reservoir described in the DEIS. These spots would be distributed between parking at boat ramps, campsites, picnic sites, and swimming/natural areas.

Raw Water Transmission Main

As shown in Table 3.2.9-2 in Section 3.2.9.1 of the DEIS, the roads affected by the construction of the water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd

reservoir, have a moderate volume of traffic and good LOS rating. The construction process would slow traffic on all affected roads, with the most notable impact on the State highways, KY 89 and KY 587. Local ADTs would be affected, lowering the LOS ratings of the impacted stretch of road during construction. However, LOS ratings would not significantly decrease, resulting in unchanged total volumes of vehicles on the highways in the vicinity of the proposed construction site.

3.2.9.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

As the boundaries of the proposed War Fork and Steer Fork, 1.3 mgd project site lie completely within those of the proposed War Fork and Steer Fork, 2.2 mgd site, the description of the surrounding road network provided in Section 3.2.9.2.6 above would be applicable for the War Fork and Steer Fork, 2.2 mgd alternative. Refer to this section for this information.

The LOS ratings on the major roads surrounding the proposed War Fork and Steer Fork, 2.2 mgd project site may be affected slightly by the hauling of construction materials. However, it is difficult to ascertain the exact impact of increased numbers of trucks on the curvy and narrow highways. Although the traffic volumes would not significantly increase, the presence of more trucks would slow traffic. As the anticipated total number of truck trips needed for hauling of materials to this site would be about 5,440 trips, slightly more than 90 truck trips per day would be added throughout the network of roads surrounding the project site. This is merely a predicted volume, not addressing the feasibility of the number of trucks needed to make these trips. If hauling were performed by one truck returning to the site rather than multiple trucks completing the trips, slow traffic might be more easily avoided. One truck repeating its trip throughout the day would result in a lower percentage of heavy-vehicles in the traffic flow than if multiple trucks caravan or make multiple trips at the same times throughout the day. The percentage of heavy vehicles in traffic helps determine the overall LOS ratings of the roadway segment due to slowed conditions.

As mentioned in Section 2.4.1.2.5 of this FEIS, the approximate number of truckloads of each raw material that would be needed for the dam at the proposed War Fork and Steer Fork, 1.3 mgd site are: 660 truckloads of cement; 1,510 truckloads of sand; and 3,270 truckloads of gravel. Trucks importing cement to the project site are anticipated to primarily utilize US 421 and KY 89. Trucks carrying sand to the site are expected to utilize either US 421 or KY 587 for hauling. Gravel hauling is anticipated to primarily occur on US 421 and KY 30.

Increased numbers of construction-related truck trips for the hauling of construction materials would affect the LOS ratings on the roadways surrounding the War Fork and Steer Fork, 2.2 mgd project site. Construction-related traffic would not pose a significant impact to this region, as many of the highways surrounding the site are not the proposed hauling routes for construction materials. As shown in **Table 3.2.9-13**, LOS levels on roads anticipated to be used for hauling would be minimally affected, still allowing relatively unimpeded flow of traffic around the proposed War Fork and Steer Fork, 2.2 mgd project site.

Table 3.2.9-13. Anticipated Road Network Levels of Service (LOS) and Traffic Volumes Due to Construction at the Proposed War Fork and Steer Fork, 2.2 mgd Site					
Roadway	**Segment**	**Anticipated ADT (2003)**	**Peak Hour Volume (p.m.)**	**LOS**	**Current LOS**
KY 89	New School Road to Bradshaw-Macedonia Road	1,135	114	B	B
US 421	Begley Road to KY 1071	3,825	383	C	C
KY 587	US 421 to Huff School Road	1,557	156	B	B

The risk of traffic accidents on the roads surrounding the proposed War Fork and Steer Fork, 2.2 mgd site would be the same for that presented in Section 3.2.9.2.6 above. Please refer to that section for this information.

One USFS road, F.S. 3109, on the War Fork and Steer Fork, 2.2 mgd project site would be inundated by the proposed reservoir. Details on this portion of F.S. 3109 are provided in Section 3.2.9.2.6 above.

As shown in Table 3.2.9-2 of the DEIS, the LOS ratings for the State highways surrounding the proposed War Fork and Steer Fork, 2.2 mgd project site are currently adequate. The highways sustain a LOS level allowing traffic to flow relatively unimpeded on the narrow and curvy roads of the area. Under the operational phase of the proposed action, recreational traffic at the proposed reservoir at the War Fork and Steer Fork, 2.2 mgd site would also be accommodated at a reasonable LOS level on these State highways, regardless of the size of the recreational facilities.

The anticipated traffic volumes and associated peak hour (p.m.) volumes, by recreational facility size, for the roads surrounding the proposed War Fork and Steer Fork, 2.2 mgd reservoir, during the operational phase of the proposed reservoir, would be less than or equal to those presented in Table 3.2.9-6 of the DEIS for the War Fork and Steer Fork, 3.5 mgd site. The discussion of the highways surrounding the proposed War Fork and Steer Fork, 2.2 mgd reservoir, and the impacts of increased traffic on these roads during the operational phase of the proposed action, is the same as that provided in Section 3.2.9.2.6 above for the War Fork and Steer Fork, 1.3 mgd alternative. Please refer to that section for this information.

Parking facilities would be located on-site for the visitors of the proposed reservoir. Although the exact number of parking spots for visitors that would be provided at the War Fork and Steer Fork, 2.2 mgd reservoir is currently unknown, it is assumed to be less than or equal to the 80 spots projected for the War Fork and Steer Fork, 3.5 mgd reservoir described in the DEIS. These spots would be distributed between parking at boat ramps, campsites, picnic sites, and swimming/natural areas.

Raw Water Transmission Main

As shown in Table 3.2.9-2 in Section 3.2.9.1 of the DEIS, the roads affected by the construction of the water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir, have a moderate volume of traffic and good LOS rating. Impacts on these roads would

be the same as those discussed in Section 3.2.9.2.6 above. Refer to that section for this information.

3.2.9.2.8 Wood Creek Lake Pipeline

Construction of the Wood Creek Lake pipeline would slow traffic on all affected roads, with the most notable impact on the major highways, particularly US 25, KY 490, US 421, and KY 587. Local ADTs would be affected, lowering the LOS ratings of the impacted stretch of road during construction. However, LOS ratings would not significantly decrease, resulting in unchanged total volumes of vehicles on the highways in the vicinity of the proposed construction site.

Traffic accident rates would likely not increase significantly from the construction of the water transmission pipeline. Flagging and lane closures would slow traffic around the construction sites, causing some unaware motorists to possibly cause accidents near the slow-downs. The increased presence of construction equipment on the road and in the ROW would be separated from flowing traffic by the flagmen. Thus, incidents of collisions with vehicles should not be a significant problem.

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd from Wood Creek Lake to the JCWA distribution system, and a pipeline capable of transporting 2.19 mgd to the JCWA distribution system. A slightly wider area of disturbance along affected roadways would be expected if the larger capacity pipeline were constructed. However, as mentioned in Section 2.4.2 of the DEIS, only one lane, the lane adjacent to the construction activities, would be closed during construction of the water main, and traffic would be diverted around the closed lane into the one free lane (Williams, 1999e). Both lanes would not be closed, thus preventing the need to detour traffic onto local roads. Therefore, impacts on transportation and traffic are not likely to vary based on the capacity of the water transmission pipeline constructed.

3.2.9.2.9 Lock 14 Pipeline

Construction of the Lock 14 pipeline would slow traffic on all affected roads, with the most notable impact on the major highways, particularly KY 587, US 421, and KY 1071. Local ADTs would be affected, lowering the LOS ratings of the impacted stretch of road during construction. However, LOS ratings would not significantly decrease, resulting in unchanged total volumes of vehicles on the highways in the vicinity of the proposed construction site. Impacts of this alternative on traffic accident rates would be the same as those discussed in Section 3.2.9.2.8 above for the Wood Creek Lake pipeline.

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd from Lock 14 to the JCWA Treatment Plant, and a pipeline capable of transporting 2.19 mgd to the JCWA Treatment Plant. A slightly wider area of disturbance along affected roadways would be expected if the larger capacity pipeline were constructed. However, as mentioned in Section 2.4.2 of the DEIS, only one lane, the lane adjacent to the construction activities, would be closed during construction of the water main, and traffic would be diverted around the closed lane into the one free lane (Williams, 1999e). Both lanes would not be closed,

thus preventing the need to detour traffic onto local roads. Therefore, impacts on transportation and traffic are not likely to vary based on the capacity of the water transmission pipeline constructed from Lock 14.

3.2.9.2.10 Summary of Impacts

The following table lists the potential impacts on transportation resulting from the additional alternatives investigated in this FEIS.

Table 3.2.9-14. Summary of Impacts on Transportation From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Change in level of service (LOS) of existing roads; • Create traffic congestion from construction vehicles; • Increase risk of vehicular accidents on public roads due to construction-related traffic and to recreation traffic; and • Change of roadway structure due to highway relocations.	• Insignificant • Insignificant • Insignificant • Insignificant
War Fork and Steer Fork, 2.2 mgd	• Change in LOS of existing roads; • Create traffic congestion from construction vehicles; • Increase risk of vehicular accidents on public roads due to construction-related traffic and to recreation traffic; and • Change of roadway structure due to highway relocations.	• Insignificant • Insignificant • Insignificant • Insignificant
Wood Creek Lake Pipeline	• Change in LOS of existing roads; • Create traffic congestion from construction vehicles; and • Increase risk of vehicular accidents on public roads due to construction-related traffic.	• Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Change in LOS of existing roads; • Create traffic congestion from construction vehicles; and • Increase risk of vehicular accidents on public roads due to construction-related traffic.	• Insignificant • Insignificant • Insignificant

In some cases, potential impacts on transportation are incremental. Although certain impacts have been given the same rating at all alternative project sites, these impacts would be greater at some sites than at others. These differences are discussed in Sections 3.2.9.2.6 through 3.2.9.2.9. The differences, however, would not change the impact ratings given in the above table.

3.2.9.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.9.3, Mitigation, of the DEIS, for a discussion of measures that could be taken to lessen adverse impacts on transportation and traffic resulting from the proposed action.

3.2.10 WASTE MANAGEMENT

3.2.10.1 Affected Environment

Section 3.2.10.1, Affected Environment, of the DEIS discusses the aspects of waste generation and management common to all alternative affected project areas. Specifically, this section addresses existing waste management practices common to all of the project sites and in Jackson County as a whole, the existing waste disposal capacity in the vicinity of the project sites, and waste generation and management at the Jackson County Water Association (JCWA) Treatment Plant, including waste sludge disposal.

In addition to the two permitted solid waste disposal facilities serving Jackson County that were discussed in Section 3.2.10.1, Affected Environment, of the DEIS, a third disposal facility, Mexicold Hill Recycling, would also be available for disposal of solid wastes resulting from this project. This facility is less than one acre in size and is located in Laurel County (Belcher, 2000).

There are no other changes to this section for the FEIS. Refer to Section 3.2.10.1, Affected Environment, of the DEIS for a discussion on aspects of the affected environment that are common to all projects sites.

3.2.10.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.10.1.1, War Fork and Steer Fork, of the DEIS for a discussion on the affected environment for this alternative.

3.2.10.1.2 Sturgeon Creek, 8.5 mgd

According to the new cost estimates prepared for the Sturgeon Creek, 8.5 mgd alternative, presented in Appendix Q of this FEIS, there are 44 houses, 6 trailers, 33 barns, 53 small outbuildings, and 10 detached garages currently present at this site (Kenvirons, 2000b). These numbers vary slightly from those presented in Section 3.2.10.1.2 of the DEIS. There are no other changes to this section for the FEIS. Please refer to Section 3.2.10.1.2, Sturgeon Creek, 8.5 mgd, for a discussion on the affected environment for this alternative.

3.2.10.1.3 Sturgeon Creek, 3.5 mgd

According to the new cost estimates prepared for the Sturgeon Creek, 3.5 mgd alternative, presented in Appendix Q of this FEIS, there are 27 houses, 4 trailers, 25 barns, 35 small outbuildings, and 4 detached garages currently present at this site (Kenvirons, 2000b). There are no other changes to this section for the FEIS. Please refer to Section 3.2.10.1.3, Sturgeon Creek, 3.5 mgd, for a discussion on the affected environment for this alternative.

3.2.10.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

There are currently no households living on the proposed War Fork and Steer Fork, 1.3 mgd dam and reservoir site (Schmitt, 1999f). In addition, there are no barns, trailers, or other structures, such as petroleum storage tanks or water wells, present on this site (Kenvirons, 2000b). Therefore, no solid, sanitary, or other wastes are known to be generated at this site.

The Jackson County Area Solid Waste Management Plan lists no illegal dumps on the proposed War Fork and Steer Fork, 1.3 mgd dam and reservoir site (JCETF, 1997). However, there may be unknown open dumps in this area. United States Geological Survey (USGS) maps indicate that no oil wells are present in or around this project site. This site is neither listed in the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database nor on the National Priorities List (NPL), and has apparently not been assigned an EPA hazardous waste identification number (USEPA, 1999).

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir site would follow mostly alongside existing roadways in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW) to the JCWA Treatment Plant at Tyner Lake. Two roads along which the water transmission main would follow, F.S. Road 3109 and Turkey Foot Road (F.S. 4), are National Forest jurisdiction roads. ROW along these roads for construction and operation of the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would be required in the form of an SUP from the USFS. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners. The transmission main would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road (Kenvirons, 1999d). The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water. There are no wastes currently generated along this route.

3.2.10.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

There are currently no households living on the proposed War Fork and Steer Fork, 2.2 mgd dam and reservoir site (Schmitt, 1999f). In addition, there are no barns, trailers, or other structures, such as petroleum storage tanks or water wells, present on this site (Kenvirons, 2000b). Therefore, no solid, sanitary, or other wastes are known to be generated at this site.

The Jackson County Area Solid Waste Management Plan lists no illegal dumps on the proposed War Fork and Steer Fork, 2.2 mgd dam and reservoir site (JCETF, 1997). However, there may be unknown open dumps in this area. USGS maps indicate that no oil wells are present in or around this project site. This site is neither listed in the EPA's CERCLIS database nor on the NPL, and has apparently not been assigned an EPA hazardous waste identification number (USEPA, 1999).

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir site would follow the same route as that from the War Fork and Steer Fork, 1.3 mgd reservoir discussed in Section 3.2.10.1.4 above. There are no wastes currently generated along this route.

3.2.10.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road, and would then run northeast to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. There are no wastes currently generated along this route.

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd of treated water from the Wood Creek Water District distribution system to the JCWA distribution system and one capable of transporting 2.19 mgd of treated water to the JCWA distribution system.

3.2.10.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). There are no wastes currently generated along this route.

Under this alternative, two pipeline capacities are investigated in this FEIS: a pipeline capable of transporting 1.33 mgd of raw water from Lock 14 to the JCWA Treatment Plant and one capable of transporting 2.19 mgd of raw water to the JCWA Treatment Plant.

3.2.10.2 Environmental Consequences

No changes have been made to the list of potential impacts on waste management resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.10.2, Environmental Consequences, of the DEIS for this list.

As in the DEIS, the potential impacts to waste management were derived from evaluating the features of the proposed action that could generate waste, by identifying the types and anticipated quantities of waste that would be generated by this project, and through consideration of the existing waste management practices in Jackson County and the current capacity for waste disposal in the surrounding area.

It should be noted that Kentucky regulations allow two other methods for disposal of construction/demolition debris, in addition to the method of hauling the debris to an off-site permitted facility that was discussed in the DEIS. 401 Kentucky Administrative Regulations (KAR) 47:150, Section 1, Subsection 5, allows onsite disposal, or burial, of demolition debris which contain no asbestos. Disposal by this method must occur in the immediate vicinity of the project site. Under this regulation, a permit-by-rule is automatically granted, provided that no environmental performance standards, as outlined in 401 KAR 47:030, are violated. In addition to this method of disposal, the construction contractor could acquire a permit for a less than one-acre construction/demolition debris landfill near the project site. 401 KAR 48:320 and Kentucky Revised Statute (KRS) 224.40-120 allow construction/demolition debris to be landfilled under a permit-by-rule, provided certain citing requirements, operating conditions, and financial assurances are met.

There are no other changes to this section for the FEIS. Refer to Section 3.2.10.2, Environmental Consequences, of the DEIS for a discussion of the impacts on waste management common to all dam and reservoir alternatives, and to all proposed water transmission main routes.

3.2.10.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.10.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts of this alternative on waste management.

3.2.10.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.10.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential impacts of this alternative on waste management.

3.2.10.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.10.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts of this alternative on waste management.

3.2.10.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.10.2.4, No Action, of the DEIS for a discussion of the potential impacts of this alternative on waste management.

3.2.10.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.10.2.5, Summary of Impacts, and Table 3.2.10-3, Summary of Impacts on Waste Management, of the DEIS.

3.2.10.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

Based on the most recent cost estimate information, approximately 65 acres of land would need to be cleared of vegetation for a reservoir with a normal pool elevation of 946 feet above MSL at the proposed War Fork and Steer Fork, 1.3 mgd site (Kenvirons, 2000b). An additional three to five acres would need to be cleared for a new access road leading to this site. The majority of this land is forested, with a few acres of grassy clearings. Approximately 11,000 cu. yd. of foundation would need to be excavated during construction of a dam at this site (Kenvirons, 2000b). Demolition debris from site preparation and construction activities at the War Fork and Steer Fork, 1.3 mgd site would be minimal, due to no known structures being present on the site.

Raw Water Transmission Main

Approximately 47,000 linear feet, or about 8.9 miles, of pipe would be required for the proposed route of the water transmission main from the War Fork and Steer Fork, 1.3 mgd reservoir to the treatment plant (Kenvirons, 2000b). Approximately 1,500 linear feet (0.3 miles) of pavement from existing roads would be disturbed, and would be replaced upon completion of construction.

3.2.10.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

Based on the most recent cost estimate information, approximately 88 acres of land would need to be cleared of vegetation for a reservoir with a normal pool elevation of 960 feet above MSL at the proposed War Fork and Steer Fork, 2.2 mgd site (Kenvirons, 2000b). An additional three to five acres would need to be cleared for a new access road leading to this site. The majority of this land is forested, with a few acres of grassy clearings. Approximately 14,000 cu. yd. of foundation would need to be excavated during construction of a dam at this site (Kenvirons,

2000b). Demolition debris from site preparation and construction activities at the War Fork and Steer Fork, 2.2 mgd site would be minimal, due to no known structures being present on the site.

Raw Water Transmission Main

Approximately 47,000 linear feet, or about 8.9 miles, of pipe would be required for the proposed route of the water transmission main from the War Fork and Steer Fork, 2.2 mgd reservoir to the treatment plant (Kenvirons, 2000b). Approximately 1,500 linear feet (0.3 miles) of pavement from existing roads would be disturbed, and would be replaced upon completion of construction.

3.2.10.2.8 Wood Creek Lake Pipeline

Approximately 119,500 linear feet, or about 22.6 miles, of pipe would be required for the proposed route of the Wood Creek Lake water transmission pipeline. Approximately 3,800 linear feet (about 0.7 miles) of pavement from existing roads would be disturbed, and would be replaced upon completion of construction (Kenvirons, 2000b). Impacts on waste management associated with this alternative would not differ based on the capacity of the pipeline constructed (1.3 mgd verses 2.2 mgd).

Since this alternative would involve importing treated water to serve Jackson County, no impacts on waste management would occur from operations at the JCWA Treatment Plant. In addition, this alternative would not increase the amount of sludge generated at the JCWA Treatment Plant, as the imported water would not need to be treated there.

3.2.10.2.9 Lock 14 Pipeline

Approximately 108,000 linear feet, or about 20.5 miles, of pipe would be required for the proposed route of the water transmission pipeline leading from Lock 14 of the Kentucky River to the JCWA Treatment Plant. Approximately 3,450 linear feet (about 0.65 miles) of pavement from existing roads would be disturbed, and would be replaced upon completion of construction (Kenvirons, 2000b). Impacts on waste management associated with this alternative would not differ based on the capacity of the pipeline constructed (1.3 mgd verses 2.2 mgd).

3.2.10.2.10 Summary of Impacts

The following table lists the potential impacts on waste management resulting from the additional alternatives investigated in this FEIS.

Table 3.2.10-4. Summary of Impacts on Waste Management From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Increase solid waste, sanitary waste, and construction/demolition waste; • Increase potential for POL spills during storage and handling, and during operations at the JCWA Treatment Plant; and	• Insignificant • Insignificant

	• Increase sludge from operations at the JCWA Treatment Plant.	• Insignificant
War Fork and Steer Fork, 2.2 mgd	• Increase solid waste, sanitary waste, and construction/demolition waste; • Increase potential for POL spills during storage and handling, and during operations at the JCWA Treatment Plant; and • Increase sludge from operations at the JCWA Treatment Plant.	• Insignificant • Insignificant • Insignificant
Wood Creek Lake Pipeline	• Increase solid waste, sanitary waste, and construction/demolition waste; and • Increase potential for POL spills during storage and handling.	• Insignificant • Insignificant
Lock 14 Pipeline	• Increase solid waste, sanitary waste, and construction/demolition waste; • Increase potential for POL spills during storage and handling, and during operations at the JCWA Treatment Plant; and • Increase sludge from operations at the JCWA Treatment Plant.	• Insignificant • Insignificant • Insignificant

In comparing the relative significance of the potential impacts on waste management resulting from the alternatives investigated in Sections 3.2.10.2.6 through 3.2.10.2.9 of this FEIS, the reservoir alternatives would generate more waste, and thus have a greater impact, than the pipeline alternatives. The War Fork and Steer Fork, 2.2 mgd alternative would have the greatest impact, followed by the War Fork and Steer Fork, 1.3 mgd alternative. However, minimal construction or demolition waste would be expected from the project at either of the War Fork and Steer Fork sites, due, in part, to no known structures being present in the project area. The two pipeline alternatives would generate approximately the same amount of waste, and therefore, have approximately the same level of impact. Impacts on waste management resulting from the two pipeline alternatives are not anticipated to differ largely depending on the capacity chosen (1.3 mgd verses 2.2 mgd). All impacts on waste management, however, would still be insignificant, regardless of the size of the reservoir or site chosen for the project.

3.2.10.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.10.3, Mitigation, of the DEIS for a discussion of mitigation measures that would reduce potential impacts on waste management resulting from the proposed action.

3.2.11 HUMAN HEALTH AND SAFETY

3.2.11.1 Affected Environment

There are no changes to this section for the FEIS. Refer to Section 3.2.11.1, Affected Environment, of the DEIS for a discussion of the aspects of the affected environment that are common to all alternatives.

3.2.11.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.11.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected environment for this alternative.

3.2.11.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.11.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.11.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.11.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.11.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

There no households currently living on the proposed War Fork and Steer Fork, 1.3 mgd project site (Schmitt, 1999f). Since the dam and reservoir at this site would be smaller than those at the War Fork and Steer Fork, 3.5 mgd site discussed in the DEIS, a workforce smaller than or equal in size to that required for the War Fork and Steer Fork, 3.5 mgd site would be required for site preparation and construction of a dam and reservoir at this site.

The land immediately downstream of the proposed dam at the War Fork and Steer Fork, 1.3 mgd site is managed by the U.S. Forest Service (USFS), and contains no private residences. Only two facilities are located downstream of the proposed dam at this site. These are the Turkey Foot Campground, located approximately 0.25 miles downstream, and a portion of the Sheltowee Trace Trail, which is accessible from Turkey Foot Campground (Allen, 1999).

Approximately half of the land comprising the watershed for the proposed War Fork and Steer Fork, 1.3 mgd reservoir consists of forested USFS land; the other half is primarily pastureland (Henderson, 1999). Very little, if any, pesticide use occurs on these land types.

Raw Water Transmission Main

Only two major highways would be affected along the proposed water transmission main route from the proposed War Fork and Steer Fork, 1.3 mgd reservoir site. These are KY 587 and KY 1071. The Kentucky Department of Transportation (KDOT) right-of-way (ROW) width for KY 587 is 50 feet; that for KY 1071 is 40 feet (Jewell, 1999d).

The projected 1999 Average Daily Traffic (ADT) rate for the segment of KY 587 from US 421 to Huff School Road is approximately 1,426 vehicles per day. During peak evening traffic hours, about 143 vehicles per hour are estimated to travel on KY 587. The segment of KY 1071 from US 421 to Blackwater Road has a projected 1999 ADT rate of approximately 438 vehicles per day. The peak evening rate for this highway is estimated at about 44 vehicles per hour.

3.2.11.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

There no households currently living on the proposed War Fork and Steer Fork, 2.2 mgd project site (Schmitt, 1999f). Since the dam and reservoir at this site would be smaller than those at the War Fork and Steer Fork, 3.5 mgd site discussed in the DEIS, a workforce smaller than or equal in size to that required for the War Fork and Steer Fork, 3.5 mgd site would be required for site preparation and construction of a dam and reservoir at this site.

The land immediately downstream of the proposed dam at the War Fork and Steer Fork, 2.2 mgd site is managed by the USFS, and contains no private residences. Only two facilities are located downstream of the proposed dam at this site. These are the Turkey Foot Campground, located approximately 0.25 miles downstream, and a portion of the Sheltowee Trace Trail, which is accessible from Turkey Foot Campground (Allen, 1999).

Approximately half of the land comprising the watershed for the proposed War Fork and Steer Fork, 2.2 mgd reservoir consists of forested USFS land; the other half is primarily pastureland (Henderson, 1999). Very little, if any, pesticide use occurs on these land types.

Raw Water Transmission Main

Since the route for the raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would be the same as that for the water main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir, the same two major highways would be affected as discussed in Section 3.2.11.1.4 above. Please refer to that section for information on these highways.

3.2.11.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The pipeline would continue northeast on Filter Plant Road, turning southeast alongside

US 25. The pipeline would follow alongside US 25 to Dean Hundley Road, and would then run northeast to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main.

The major highways that would be affected by the construction of a pipeline from Wood Creek Lake are US 25, KY 490, KY 30, and US 421. The KDOT ROW width for KY 30 is 50 feet; that for US 421 is 60 feet (Jewell, 1999d). It is assumed that the KDOT ROW widths for US 25 and KY 490 are between 40 and 60 feet, the typical range for highways in Kentucky.

No swimming or other primary contact recreation is permitted on Wood Creek Lake. In addition, no houseboats or boats with toilet facilities are permitted on the lake. The Wood Creek Water District uses techniques such as flocculation and chlorination to treat raw water withdrawn from Wood Creek Lake for the purposes of water supply, and has never had any problems meeting national and State drinking water standards. The only reported water quality problem at Wood Creek Lake was due to algal blooms (Napier, 2000).

3.2.11.1.7 Lock 14 Pipeline

The Lock 14 raw water transmission pipeline would be constructed from Lock 14 of the Kentucky River to the JCWA Treatment Plant. From Lock 14 at Heidelberg, the raw water transmission main would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Under this option, the entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c).

The major highways that would be affected by the construction of a pipeline from Lock 14 are KY 399, KY 587, KY 1071, and potentially US 421. The KDOT ROW width for KY 587 is 50 feet; that for KY 1071 is 40 feet; and that for US 421 is 60 feet (Jewell, 1999d). It is assumed that the KDOT ROW width for KY 399 is between 40 and 60 feet, the typical range for highways in Kentucky.

3.2.11.2 Environmental Consequences

No changes have been made to the list of potential impacts on human health and safety resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.11.2, Environmental Consequences, of the DEIS for this list.

There are no changes to this section for the FEIS. Refer to Section 3.2.11.2, Environmental Consequences, of the DEIS for a discussion of the potential impacts on human health and safety that are common to all dam and reservoir alternatives, and to all proposed routes of the raw water transmission main. This section also provides a discussion of the safety measures that would be in place during all phases of the project for all alternatives.

As in the DEIS, the potential impacts on human health and safety were determined by evaluating features of the proposed action that could threaten public health and safety and by examining safety and health protection measures that would be in place during the various phases of the projects.

3.2.11.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.11.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts of this alternative on human health and safety.

3.2.11.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.11.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential impacts of this alternative on human health and safety.

3.2.11.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.11.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts of this alternative on human health and safety.

3.2.11.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.11.2.4, No Action, of the DEIS for a discussion of the potential impacts of this alternative on human health and safety.

3.2.11.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.11.2.5, Summary of Impacts, and Table 3.2.11-1, Summary of Impacts on Human Health and Safety, of the DEIS.

3.2.11.2.6 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

Since pesticide use on the watershed feeding the proposed War Fork and Steer Fork, 1.3 mgd reservoir is negligible, the potential for soil contamination due to pesticides is minimal.

Therefore, an adverse impact on water quality of the reservoir due to current pesticide use in the watershed is not expected to occur.

Since the proposed dam at the War Fork and Steer Fork, 1.3 mgd site would lie in the same location as the dam at the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, the dam at the War Fork and Steer Fork, 1.3 mgd site has been preliminarily assigned a Class B (Moderate Hazard) classification. Structure, or Hazard, Classifications (401 KAR 4:030), as well as the types of classifications, are described in Section 3.2.11.2, Environmental Consequences, of the DEIS. A Class B structure classification was assigned to the proposed dam at this site because failure of this dam would result in a failure to supply residents with water from the reservoir at this site (Purkey, 2000a). In addition, since Turkey Foot Campground and the Sheltowee Trail are the only facilities downstream of this site, failure of the dam would be expected to cause damage to these structures only, with a very low probability of loss of human life.

Raw Water Transmission Main

Approximately 47,000 linear feet, or about 8.9 miles, of pipe would be required for the route of the water transmission main from the proposed War Fork and Steer Fork, 1.3 mgd reservoir to the JCWA Treatment Plant (Kenvirons, 2000b). Most of this length would run alongside roadways in Jackson County. Approximately 60 linear feet of streams would need to be crossed during construction. A discussion of the potential impacts on human health and safety from the construction and operation of a water transmission pipeline are discussed in Section 3.2.11.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS. Please refer to that section for this discussion.

3.2.11.2.7 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

Since pesticide use on the watershed feeding the proposed War Fork and Steer Fork, 2.2 mgd reservoir is negligible, the potential for soil contamination due to pesticides is minimal. Therefore, an adverse impact on water quality of the reservoir due to current pesticide use in the watershed is not expected to occur.

Since the proposed dam at the War Fork and Steer Fork, 2.2 mgd site would lie in the same location as the dam at the War Fork and Steer Fork, 3.5 mgd site that was discussed in the DEIS, the dam at the War Fork and Steer Fork, 2.2 mgd site has been preliminarily assigned a Class B (Moderate Hazard) classification. A Class B structure classification was assigned to the proposed dam at this site because failure of this dam would result in a failure to supply residents with water from the reservoir at this site (Purkey, 2000a). In addition, since Turkey Foot Campground and the Sheltowee Trail are the only downstream facilities at this site, failure of the dam would be expected to cause damage to these structures only, with a very low probability of loss of human life.

Raw Water Transmission Main

Approximately 47,000 linear feet, or about 8.9 miles, of pipe would be required for the route of the water transmission main from the proposed War Fork and Steer Fork, 2.2 mgd reservoir to the JCWA Treatment Plant (Kenvirons, 2000b). Most of this length would run alongside roadways in Jackson County. Approximately 60 linear feet of streams would need to be crossed during construction. A discussion of the potential impacts on human health and safety from the construction and operation of a water transmission pipeline are discussed in Section 3.2.11.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS. Please refer to that section for this discussion.

3.2.11.2.8 Wood Creek Lake Pipeline

Approximately 119,000 linear feet, or about 22.6 miles, of pipe would be required for the construction of the water transmission pipeline connecting the Wood Creek Water District distribution system and the JCWA distribution system (Kenvirons, 2000b). The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. Approximately 1,060 linear feet of streams would need to be crossed during construction (Kenvirons, 2000b). A discussion of the potential impacts on human health and safety from the construction and operation of a water transmission pipeline are discussed in Section 3.2.11.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS. Please refer to that section for this discussion.

3.2.11.2.9 Lock 14 Pipeline

Approximately 108,000 linear feet, or about 20.5 miles, of pipe would be required for the construction of the water transmission pipeline leading from Lock 14 of the Kentucky River to the JCWA Treatment Plant (Kenvirons, 2000b). Approximately 150 linear feet of streams would need to be crossed during construction. A discussion of the potential impacts on human health and safety from the construction and operation of a water transmission pipeline are discussed in Section 3.2.11.2, Environmental Consequences, Raw Water Transmission Main, of the DEIS. Please refer to that section for this discussion.

3.2.11.2.10 Summary of Impacts

The following table lists the potential impacts on human health and safety resulting from the additional alternatives investigated in this FEIS.

Table 3.2.11-2. Summary of Impacts on Human Health and Safety From Reassessed Alternatives

Altemative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Degrade human health and safety from the risk of POL, chemical, or hazardous material spills during storage and handling;	• Insignificant
	• Affect public health from construction activities;	• Insignificant

	• Affect human health and safety by degrading water quality during construction and operations; • Affect human health and safety by degrading air quality during construction; • Harm to recreational users of the reservoir; and • Degrade human health and safety due to a potential dam failure.	• Insignificant • Insignificant • Insignificant • Insignificant
War Fork and Steer Fork, 2.2 mgd	• Degrade human health and safety from the risk of POL, chemical, or hazardous material spills during storage and handling; • Affect public health from construction activities; • Affect human health and safety by degrading water quality during construction and operations; • Affect human health and safety by degrading air quality during construction; • Harm to recreational users of the reservoir; and • Degrade human health and safety due to a potential dam failure.	• Insignificant • Insignificant • Insignificant • Insignificant • Insignificant • Insignificant
Wood Creek Lake Pipeline	• Degrade human health and safety from the risk of POL, chemical, or hazardous material spills during storage and handling; • Affect public health from construction activities; • Affect human health and safety by degrading water quality during construction; and • Affect human health and safety by degrading air quality during construction.	• Insignificant • Insignificant • Insignificant • Insignificant
Lock 14 Pipeline	• Degrade human health and safety from the risk of POL, chemical, or hazardous material spills during storage and handling; • Affect public health from construction activities; • Affect human health and safety by degrading water quality during construction; and • Affect human health and safety by degrading air quality during construction.	• Insignificant • Insignificant • Insignificant • Insignificant

3.2.11.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.11.3, Mitigation, for a discussion of mitigation measures that would reduce impacts on human health and safety.

3.2.12 SOCIOECONOMICS

Section 3.2.12, Socioeconomics, of the DEIS provides a discussion on potential changes in the economic or social structure of a community which may lead to significant socioeconomic impacts and a community's ability to accommodate such changes. This section also provides a description of the approach used for the socioeconomic impacts analysis conducted for the proposed action, a breakdown of the geographic frame of reference for the analysis, and the primary types of socioeconomic impacts analyzed. There are no changes to this section for the FEIS. Refer to this section of the DEIS for this information.

Several comments received on the DEIS questioned the economic effect the Kentucky Highlands Empowerment Zone (EZ) has had on Jackson County. In response to these questions and concerns, the Kentucky Highlands Investment Corporation, as Lead Entity for the Kentucky Highlands EZ, prepared a response letter to demonstrate the various effects the EZ has had on the County. This letter is provided in Appendix V (V-1) of this FEIS. This letter addresses employment, investments, population growth, poverty rates, and farm and tobacco income.

3.2.12.1 Affected Environment

The aspects of the affected environment for socioeconomic impacts common to all alternatives is represented in the DEIS by three geographic levels: regional level, county level, and the community surrounding the proposed dam and reservoir sites. There are no changes to this section for the FEIS. Please refer to Section 3.2.12.1, Affected Environment, of the DEIS for this information.

3.2.12.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.12.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected socioeconomic environment specific to this proposed project site.

3.2.12.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.12.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected socioeconomic environment specific to this proposed project site.

3.2.12.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.12.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected socioeconomic environment specific to this proposed project site.

3.2.12.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The proposed War Fork and Steer Fork, 1.3 mgd dam would be located in eastern Jackson County, approximately 0.5 air miles southwest of Turkey Foot Campground. The location of the proposed dam for this alternative is the same as that for the War Fork and Steer Fork, 3.5 mgd dam described in the DEIS. Nearly all of the 65 acres up to normal pool level of the proposed War Fork and Steer Fork, 1.3 mgd reservoir are located within the Daniel Boone National Forest (DBNF) and are currently managed by the U.S. Forest Service (USFS). A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 215 acres of land. Of these 215 acres, 192 acres are currently managed by the USFS; the remaining 23 acres are privately-owned (Kenvirons, 2000b).

The boundaries of the proposed War Fork and Steer Fork, 1.3 mgd project area lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd project area that was described in the DEIS. Therefore, the affected community for the War Fork and Steer Fork, 1.3 mgd alternative would be the area defined by Census Block Group 9601-3, which is the same affected community described for the proposed War Fork and Steer Fork, 3.5 mgd project site in the DEIS. The geographic area of this affected community is shown in Figure 3.2.12-3 of the DEIS. This characteristics of the population of this community are described in Section 3.2.12.1.1, War Fork and Steer Fork, of the DEIS. Please refer to that section for this information.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run approximately 8.9 miles to the Jackson County Water Association (JCWA) Treatment Plant. All but approximately one mile would follow alongside existing roadways, primarily in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW). Two roads along which the water transmission main would follow, F.S. Road 3109 and Turkey Foot Road (F.S. 4), are National Forest jurisdiction roads. ROW along these roads for construction and operation of the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would be required in the form of an SUP from the USFS. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners.

The transmission main would run northeast alongside F.S. 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest along Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d).

Socioeconomic effects of the construction of the water transmission main from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would not be expected to extend significantly beyond the ROW. In addition to relatively unpopulated areas, the affected ROW also includes less densely-populated areas and two churches, which may be considered important to the culture of the community.

3.2.12.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The proposed War Fork and Steer Fork, 2.2 mgd dam would be situated at the same location as the proposed War Fork and Steer Fork, 3.5 mgd dam described in the DEIS. Nearly all of the 88 acres up to normal pool level of the proposed War Fork and Steer Fork, 2.2 mgd reservoir are located within the DBNF and are currently managed by the USFS. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The potential maximum flood level of the proposed War Fork and Steer Fork, 2.2 mgd reservoir would lie at an approximate elevation of 980 feet above MSL. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 275 acres of land. Of these 275 acres, 244 acres are currently managed by the USFS; the remaining 31 acres are privately-owned (Kenvirons, 2000b).

The boundaries of the proposed War Fork and Steer Fork, 2.2 mgd project area lie completely within those of the proposed War Fork and Steer Fork, 3.5 mgd project area that was described in the DEIS. Therefore, the affected community for the War Fork and Steer Fork, 2.2 mgd alternative would be the area defined by Census Block Group 9601-3, which is the same affected community described for the proposed War Fork and Steer Fork, 3.5 mgd project site in the DEIS. The geographic area of this affected community is shown in Figure 3.2.12-3 of the DEIS. This characteristics of the population of this community are described in Section 3.2.12.1.1, War Fork and Steer Fork, of the DEIS. Please refer to that section for this information.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir to the JCWA Treatment Plant would be the same length, and follow the same route, as that leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir described in Section 3.2.12.1.4 above. Refer to that section for this information.

Socioeconomic effects of the construction of the water transmission main from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would not be expected to extend significantly beyond the ROW. In addition to relatively unpopulated areas, the affected ROW also includes less densely-populated areas and two churches, which may be considered important to the culture of the community.

3.2.12.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road. The pipeline would run northeast alongside Dean Hundley Road to Hurley Road. The water main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main.

The Wood Creek Lake pipeline would originate in Laurel County, which is located to the south of Jackson County. Demographically, Laurel County is more developed, populous, and prosperous than Jackson County. The 1999 estimated population for Laurel County was 52,015 people, with a population density of 119 people per square mile (USBC, No date). Laurel County's population grew 19.7 percent from 1990 to 1997, with substantial growth having occurred along the Interstate 75 corridor, which passes through Laurel County. The estimated 1997 median household income in Laurel County was $27,146. In 1997, an estimated 20.7 percent of the population was below the national poverty level. More detailed population characteristics of Laurel County are provided in Table M-1, Socioeconomic Characterization of the Eight-County Region of Influence, in Appendix M of the DEIS. Please refer to that appendix for more information.

3.2.12.1.7 Lock 14 Pipeline

From Lock 14 at Heidelberg, the raw water transmission main under this alternative would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Under this option, the Lock 14 pipeline would follow entirely alongside existing roadways in the KDOT or County ROW. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c).

The Lock 14 pipeline would originate at the Kentucky River in Lee County, which lies to the northeast of Jackson County. Demographically, though somewhat less populous, Lee County is similar in many respects to Jackson County. The 1999 estimated population for Lee County was 7,994 people, with a population density of 38 people per square mile (USBC, No date). Lee County's population grew 7.7 percent from 1990 to 1997. The estimated 1997 median household income for Lee County was $18,326. In 1997, an estimated 34.6 percent of the population was below the national poverty level. More detailed population characteristics of Lee

County are provided in Table M-1, Socioeconomic Characterization of the Eight-County Region of Influence, in Appendix M of the DEIS. Please refer to that appendix for more information.

3.2.12.2 Environmental Consequences

One additional socioeconomic impact has been added to the list of potential socioeconomic impacts for this FEIS for each alternative. This addition is:

- Increase in residential water user rates due to the proposed action.

Please refer to Section 3.2.12.2, Environmental Consequences, of the DEIS for the remainder of the list of potential socioeconomic impacts resulting from the proposed action.

As stated in the DEIS, socioeconomic impacts are the result of changes in the structure and patterns of the social life of community residents, and the manner in which social resources, such as physical, natural, and human resources, are defined and utilized. Significant socioeconomic effects occur when people's lives are noticeably altered by a project. Effects can include residential relocations, job gains or losses, land use changes, population changes, business gains or losses, and changes in public services.

Since the publication of the DEIS, a feasibility study has been completed by the contracting engineer that examines project-related costs and resulting water user rate impacts for each of the alternatives considered in the DEIS and this FEIS, with the exception of the Sturgeon Creek, 8.5 mgd alternative. Excerpts from the feasibility study are included in this FEIS as Appendix S, Reservoir Sizing Analysis and Description of Project Costs. The methodology and conclusions of that study with regard to water user rate impacts are summarized here.

As discussed in Section 2.4.1.1 of this FEIS, a review of present worth analysis of operation, maintenance, and replacements conducted for each alternative revealed that an inaccurate discount rate (five percent) was used in the calculations. The discount rate used for the analysis must comply with the Office of Management and Budget's Circular A-94 (Deal, 2001). The 30-year real discount rate is currently 4.2 percent, and is updated annually (OMB, 2000). Use of this somewhat lower rate would result in slightly higher present worth costs for operation, maintenance, and replacement, and thus slightly higher total project costs, for each alternative than are presented in this FEIS. However, application of this lower discount rate across all alternatives would not change the relative ranking of alternatives by cost. Refer to Section 2.4.1.1 of this FEIS for more information on this discount rate.

Each dam and reservoir alternative and the Lock 14 pipeline alternative involve transportation of raw water to the JCWA Treatment Plant for treatment and subsequent use in the distribution system. The Wood Creek Lake pipeline alternative, however, involves the transportation of potable water directly into the JCWA distribution system. Therefore, in order to compare the alternatives, the costs of treating raw water at the JCWA Treatment Plant and/or purchasing potable water from the Wood Creek Water District must be analyzed.

The JCWA has applied for funding to expand its water treatment plant at Tyner Lake. A complete breakdown of funding sources is provided in Appendix S of this FEIS. The estimated total cost for the treatment plant expansion is $3,900,000, and the amount of loan money to be reimbursed is $880,000. The long-term indebtedness incurred for the JCWA Treatment Plant expansion project was included in the user rate study. The treatment cost of $0.37 per 1,000 gallons of water was used in the analysis for water produced by JCWA, and is based on JCWA's *1999 Annual Report to the Public Service Commission* (JCEZ, 2000).

Prior to selling large volumes of water to JCWA, the Wood Creek Water District would have to increase their treatment capacity. A plan to expand the Wood Creek Water District treatment plant is already underway as a result of growth within the service area, and preliminary estimates for the expansion indicate a total cost of $4,500,000. The Wood Creek Water District is planning to fund the entire project through a U.S. Department of Agriculture (USDA), Rural Development loan. To generate revenue for the expansion, the Wood Creek Water District will have to increase their current water user rates. The Wood Creek Water District currently sells water to the East Laurel Water District and the West Laurel Water Association at a wholesale rate of $1.24 per 1,000 gallons of water (JCEZ, 2000). The amount by which this wholesale rate would increase as a result of the water treatment plant expansion was assumed to be a direct factor of the additional debt incurred from the loan, the loan coverage, and depreciation. Details on this increase are provided in Appendix S of this FEIS. Accounting for these factors, the wholesale rate for water from the Wood Creek Water District was calculated to increase by $0.33 per 1,000 gallons of water. Therefore, he estimated wholesale rate of $1.57 per 1,000 gallons of water was used in this analysis for water purchases from the Wood Creek Water District (JCEZ, 2000).

The analysis assumes that, for the dam and reservoir and Lock 14 pipeline alternatives, the JCWA will treat 0.80 mgd for the first year of operation. Water use was increased linearly from 0.80 mgd to the projected water supply need over the 50-year design life of the facility. For these alternatives, the annual cost to treat the water was calculated by multiplying the total system use, or, 0.80 mgd for 365 days/year, by the unit treatment cost, or $0.37 per 1,000 gallons (JCEZ, 2000).

For the Wood Creek Lake pipeline alternative, it was assumed that 0.50 mgd of water would be purchased from the Wood Creek Water District in the first year of operation in order to minimize any water quality problems which may result from prolonged detention times in the transmission facilities. The existing JCWA Treatment Plant was assumed to produce the difference between the total system demand and the quantity purchased from the Wood Creek Water District. Additional volumes were assumed to be purchased from Wood Creek once the capacity of JCWA's water supply reservoir was reached. The increase in JCWA's annual expenditure for water under this alternative was calculated by subtracting the cost forgone by the JCWA for not having to treat the water obtained from the Wood Creek Water District from the annual purchase cost of the Wood Creek Water District water (JCEZ, 2000). An example of this calculation is provided below.

For the Wood Creek Lake, 2.19 mgd pipeline alternative, it was assumed that 0.50 mgd would be transported through the system during the first year of operation. The annual cost to purchase this water from the Wood Creek Water District is calculated as follows:

Annual Purchase Cost = 500 gallons * 365 days/year * $1.57 per 1,000 gallons
= $286, 000

The cost forgone by the JCWA for not having to treat this water is calculated as follows:

Forgone Treatment Cost = 500 gallons * 365 days/year * $0.37 per 1,000 gallons
= $67,525

Therefore, the net result of purchasing 0.50 mgd from Wood Creek Water District would equate to an increase in annual expenditure of $219,000 ($286,525 less $67,525).

Additional data and/or criteria used to evaluate user rate impacts for this analysis are discussed in Appendix S of this FEIS. Using the above methodology, anticipated impacts on water rates for a typical residential user were calculated under each alternative. A summary of these water rate impacts are presented in **Table 3.2.12-1**.

Table 3.2.12-1. Impacts on Typical Residential Water Rates Under Each Alternative*

Alternative	Average Monthly Bill	Increased Cost for Average Monthly Bill	% Increase over Existing Rates
No Action (existing rates)	$25.02	Not applicable	Not applicable
War Fork, 3.5 mgd	$32.05	$7.03	28.16%
War Fork, 2.2 mgd	$30.45	$5.44	21.72%
War Fork, 1.3 mgd	$29.33	$4.31	17.29%
Sturgeon Creek, 3.5 mgd	$32.87	$7.85	31.38%
Wood Creek Lake Pipeline, 2.2 mgd	$33.31	$8.30	33.17%
Wood Creek Lake Pipeline, 1.3 mgd	$32.23	$7.21	28.81%
Lock 14 Pipeline, 2.2 mgd	$30.56	$5.54	22.19%
Lock 14 Pipeline, 1.3 mgd	$30.02	$5.00	20.04%

**Based on an average monthly JCWA residential bill of $25.02 for 4,517 gallons of water.*
Source: JCEZ, 2000.

Annually, the permanent increase in an average residential water bill would range from $51.72 to $99.60 more per year, from the least-cost to the most-cost alternative. This represents from 0.3 percent to 0.5 percent of the 1997 annual household income in Jackson County. Overall, each of the action alternatives would have a moderately significant adverse impact on residential water user rates.

A review and comparison of the methodologies used to calculate JCWA water production costs and water purchase costs from the Wood Creek Water District (see the Present Worth Analysis of Water Production Costs and Water Purchase Costs provided in Appendix S of this FEIS) revealed some inconsistencies. It was noted that the actual water purchase cost for water from

Wood Creek Water District would not increase by the exact cost of additional debt and depreciation. In addition, it was noted that the exiting JCWA Treatment Plant overhead costs, salaries, insurance, and other such expenditures would not increase in an amount directly proportional to the amount of water produced from the plant; the total water produced would be produced at a somewhat lower cost. Accounting for these factors, the cost of purchasing water from Wood Creek Water District would likely be less than the $1.57 per 1,000 gallons that was used in this analysis. Also, the cost of water treatment at the JCWA Treatment Plant would likely be higher than the $0.37 per 1,000 gallons of water that was used in this analysis, due to costs associated with water treatment in addition to those presented in the feasibility study (Deal, 2001).

Another factor that was noted to be inconsistent during the review of the water user rate impacts was the useful lifetime of the alternatives (Deal, 2001). The analysis of impacts on water user rates assumed all alternatives would have the same useful life (JCEZ, 2000). However, there are major components of the reservoir alternatives that would result in a longer useful life than any of the water transmission main alternatives. The useful lifetime of an alternative would only impact estimates of the water user rates, and not the total project cost of the alternative (Deal, 2001).

Since review of the methodology used to estimate impacts on water user rates resulting from the alternatives noted inconsistencies in items that could potentially affect the ranking of alternatives, sample calculations were carried out using adjusted factors. For these calculations, the discount rate, discussed in Section 2.4.1.1 of this FEIS and briefly above, was changed to 4.2 percent for all trials. Several combinations of water purchase cost (reduced as low as the current Wood Creek Water District wholesale rate of $1.24 per 1,000 gallons of water), JCWA water treatment cost (increased as high was $0.70 per 1,000 gallons of water), and extended useful lifetime of the reservoir alternatives (increased as high was 100 years) were calculated. It was concluded from these calculations that the ranking of the alternatives is not highly sensitive to these parameters. In other words, even when the most extreme values of these parameters were used, the ranking of alternatives in terms of impacts on water user rates did not change (Deal, 2001).

Dam and Reservoir

Revised cost estimates for the War Fork and Steer Fork, 3.5 mgd and the Sturgeon Creek, 3.5 mgd and 8.5 mgd alternatives were prepared for this FEIS by Kenvirons, Incorporated. Revised line item cost estimates for these sites are provided in this FEIS as Appendix Q. Line item cost estimates for the War Fork and Steer Fork, 1.3 mgd and 2.2 mgd dam and reservoir alternatives were also prepared by Kenvirons, Inc. for this FEIS, and are also provided in Appendix Q. Unlike those presented in the DEIS, the cost estimates prepared for this FEIS include the cost for land acquisition, were applicable, within the 300-foot buffer zone. More detailed explanations of the various types of costs associated with the project are provided in Appendix S of this FEIS.

Private landowners who have easements placed on all or a portion of their property within the proposed buffer zone surrounding the reservoir would still have to pay taxes on the assessed value of their property, even though uses of the land within the easement would be restricted. In

Kentucky, landowners with ten or more acres of open land, agricultural land, or forest can qualify for an agricultural valuation. As discussed in the DEIS, under a deferred assessment program, this land is taxed at its agricultural value instead of its market value. In Jackson County, this would reduce the assessed value of land from about $2,500-$5,000 per acre, which is the residential or market value, to approximately $300-$400 per acre. For residential or market value property owners in Jackson County, annual property taxes are approximately $45 per acre. This rate would be reduced to $1-$2 per acre per year under agricultural valuation of the land (Rose, 2000b). These annual County tax rates would not change with the establishment of an easement on all or portion of the property; land within the easement would be taxed at the same rates.

If residential or recreational development were to occur in the vicinity of the proposed reservoir at any of the alternative sites, property values, and subsequence property assessments would increase for those lands, at least for lands assessed at residential or market value. Therefore, land within any easement placed on such property would also be taxed more heavily. Agricultural-assessed land would not be faced with rising property taxes, although uses of this land would still be restricted; crop growing or cattle grazing would not be permitted within the easement (Rose, 2000b).

There are no other changes or additions to this section for the FEIS. All information presented in Section 3.2.12.2, Environmental Consequences, Dam and Reservoir, of the DEIS is incorporated by reference in this FEIS, except where noted. This information is applicable to the two additional dam and reservoir alternatives investigated in this FEIS only. Please refer to this section of the DEIS for a discussion of socioeconomic impacts that are common to all dam and reservoir alternatives.

Raw Water Transmission Main

Revised cost estimates and site statistics for each of the water transmission main alternatives, including the two additional water transmission main alternatives leading from existing sources of surface water investigated in this FEIS, were prepared for this FEIS by Kenvirons, Incorporated. Revised line item cost estimates for these alternatives are provided in this FEIS as Appendix Q. A more detailed discussion of the costs associated with this project are provided in Appendix S of this FEIS.

There are no other changes or additions to this section for the FEIS. Refer to Section 3.2.12.2, Environmental Consequences, Raw Water Transmission Main, for a discussion of potential socioeconomic impacts resulting from this action that are common to all alternatives.

3.2.12.2.1 War Fork and Steer Fork

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The War Fork and Steer Fork, 3.5 mgd alternative would result in a moderately significant, adverse impact on water user rates.

As mentioned in Section 3.2.12.2 above, revised cost estimates were prepared for the War Fork and Steer Fork, 3.5 mgd alternative for this FEIS. The revised total project cost for this alternative is slightly higher than that presented in the DEIS. However, this difference is not anticipated to significantly change any of the socioeconomic impacts discussed for this alternative. Construction of the dam, reservoir, and water main at the War Fork and Steer Fork, 3.5 mgd project site is still expected to have an insignificant effect on the regional economy.

It should be noted that, if a land exchange with the USFS were to occur as a result of implementation of the project at the War Fork and Steer Fork, 3.5 mgd site, the land exchange would be based on equal fair market value only. A land exchange based on equivalent acreages would not be considered.

There are no other changes to this section for the FEIS. Refer to Section 3.2.12.2.1, War Fork and Steer Fork, of the DEIS for a discussion of potential socioeconomic impacts that may result from this alternative.

3.2.12.2.2 Sturgeon Creek, 8.5 mgd

As mentioned in Section 3.2.12.2 above, revised cost estimates were prepared for the Sturgeon Creek, 8.5 mgd alternative for this FEIS. The revised total project cost for this alternative is slightly higher than that presented in the DEIS. However, this difference is not anticipated to significantly change any of the socioeconomic impacts discussed for this alternative.

There are no other changes to this section for the FEIS. Refer to Section 3.2.12.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of potential socioeconomic impacts that may result from this alternative.

3.2.12.2.3 Sturgeon Creek, 3.5 mgd

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The Sturgeon Creek, 3.5 mgd alternative would result in a moderately significant, adverse impact on water user rates.

As mentioned in Section 3.2.12.2 above, revised cost estimates were prepared for the Sturgeon Creek, 3.5 mgd alternative for this FEIS. The revised total project cost for this alternative is slightly higher than that presented in the DEIS. However, this difference is not anticipated to significantly change any of the socioeconomic impacts discussed for this alternative. Construction of the dam, reservoir, and water main at the Sturgeon Creek, 3.5 mgd project site is still expected to have an insignificant effect on the regional economy.

There are no other changes to this section for the FEIS. Refer to Section 3.2.12.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of potential socioeconomic impacts that may result from this alternative.

3.2.12.2.4 No Action

There are no changes to this section for the FEIS. Refer to Section 3.2.12.2.4, No Action, of the DEIS for a discussion of the socioeconomics impacts resulting from this alternative.

3.2.12.2.5 Summary of Impacts

As stated in Section 3.2.12.2, Environmental Consequences, the impact on water user rates as a result of the implementation of any of the action alternatives investigated in the DEIS would be rated as moderately significant. There are no other changes or additions to this section for the FEIS. Please refer to Section 3.2.12.2.5, Summary of Impacts, and Table 3.2.12-3, Summary of Impacts on Socioeconomics, of the DEIS.

3.2.12.2.6 War Fork and Steer Fork, 1.3 mgd

The proposed War Fork and Steer Fork, 1.3 mgd project site would be located in a relatively unpopulated area of Jackson County. Associated impacts on surrounding communities resulting from activities that are required during construction would be insignificant. Since there are no households currently living on the War Fork and Steer Fork, 1.3 mgd project site that would need to be relocated (Schmitt, 1999f), the potential for disruption of the local community or social services would be insignificant. Withdrawal of land from the economic base would not represent a significant change in the value and quantity of available land in the community because a majority of the land is public land and not currently part of the taxable land base of Jackson County.

Construction of the proposed dam, reservoir, and water main at the War Fork and Steer Fork, 1.3 mgd project site can be expected to have an insignificant effect on the regional economy. The total project costs for this alternative would be less than those for the War Fork and Steer Fork, 3.5 mgd alternative discussed in the DEIS. Due to the smaller scale of the project at this site, the number of jobs that would be created due to construction at the War Fork and Steer Fork, 1.3 mgd site would be less than or equal to the approximately 40 jobs created as a result of construction at the proposed War Fork and Steer Fork, 3.5 mgd project site. Although the contractors for the proposed dam have not yet been designated, it is reasonable to assume that the regional economy is sufficiently large to be able to provide a large portion of the labor and management for the project, as well as the bulk of the remaining project materials. Spending by construction workers associated with the project at the War Fork and Steer Fork, 1.3 mgd site would be an insignificant increase to the economy, totaling less than or equal to the amount projected for the War Fork and Steer Fork, 3.5 mgd alternative in Section 3.2.12.2.1 of the DEIS. Therefore, the total multiplied project input to the regional economy due to the construction activities associated with the War Fork and Steer Fork, 1.3 mgd alternative would also be less than or equal to that projected for the War Fork and Steer Fork, 3.5 mgd alternative. Per capita income for Jackson County and the region would not significantly increase as a result of this construction.

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The War Fork and Steer Fork, 1.3 mgd alternative would result in a moderately significant, adverse impact on water user rates.

Land acquisition at the War Fork and Steer Fork, 1.3 mgd site would not represent a significant impact to local community. Since the land currently designated for this project site is predominately public land, the immediate impact on the local community would be minimal. However, if this land were acquired through an exchange with the USFS, there might be a potential for impact on the community. This exchange may require Jackson County to identify and provide at least an equivalent acreage from other County-owned or private land located within the County. USFS land exchanges are based on equal fair market values only; exchanges based on equivalent acreages are not considered. The potential land exchange with the USFS at the War Fork and Steer Fork project site is discussed in detail in Section 2.4.1.5, Connected Actions, of this FEIS.

Although it may reasonably be assumed that any land offered in exchange to the USFS would not require the relocation of residential populations, some opposition to the land exchange may be anticipated from local stakeholders. The actual impact of the land exchange is difficult to anticipate until the equivalent land for exchange has been identified. The selection of land would be optional and subject to negotiation between the County and the USFS. However, the creation of an acceptable exchange would still be expected to create community concern over the loss of natural resource opportunities associated with the existing National Forest.

Since the area surrounding the proposed War Fork and Steer Fork, 1.3 mgd project site is relatively unpopulated, minimal disruption of local community activity during construction may be anticipated. As mentioned in Section 3.2.12.2, Environmental Consequences, of the DEIS, impacts on services and infrastructure at the sites would be insignificant. As with any large-scale resource development project, the most significant impact of the proposed dam and reservoir at the War Fork and Steer Fork, 1.3 mgd site would be associated with the potential alteration of the local setting and the loss of any associated resources or current uses of the site.

3.2.12.2.7 War Fork and Steer Fork, 2.2 mgd

The proposed War Fork and Steer Fork, 2.2 mgd project site would be located in a relatively unpopulated area of Jackson County. Associated impacts on surrounding communities resulting from activities that are required during construction would be insignificant. Since there are no households currently living on the War Fork and Steer Fork, 2.2 mgd project site that would need to be relocated (Schmitt, 1999f), the potential for disruption of the local community or social services would be insignificant. Withdrawal of land from the economic base would not represent a significant change in the value and quantity of available land in the community because a majority of the land is publicly-owned and not currently part of the taxable land base of Jackson County.

Construction of the proposed dam, reservoir, and water main at the War Fork and Steer Fork, 2.2 mgd project site can be expected to have an insignificant effect on the regional economy. The total project costs for this alternative would be less than those for the War Fork and Steer Fork,

3.5 mgd alternative discussed in the DEIS. Due to the smaller scale of the project at this site, the number of jobs that would be created due to construction at the War Fork and Steer Fork, 2.2 mgd site would be less than or equal to the approximately 40 jobs created as a result of construction at the proposed War Fork and Steer Fork, 3.5 mgd project site. Although the contractors for the proposed dam have not yet been designated, it is reasonable to assume that the regional economy is sufficiently large to be able to provide a large portion of the labor and management for the project, as well as the bulk of the remaining project materials. Spending by construction workers associated with the project at the War Fork and Steer Fork, 2.2 mgd site would be an insignificant increase to the economy, totaling less than or equal to the amount projected for the War Fork and Steer Fork, 3.5 mgd alternative in Section 3.2.12.2.1 of the DEIS. Therefore, the total multiplied project input to the regional economy due to construction activities associated with the War Fork and Steer Fork, 2.2 mgd alternative would also be less than or equal to that projected for the War Fork and Steer Fork, 3.5 mgd alternative. Per capita income for Jackson County and the region would not significantly increase as a result of this construction.

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The War Fork and Steer Fork, 2.2 mgd alternative would result in a moderately significant, adverse impact on water user rates.

Land acquisition at the War Fork and Steer Fork, 2.2 mgd site would not represent a significant impact to local community. Since the land currently designated for this project site is predominately public land, the immediate impact on the local community would be minimal. However, if this land were acquired through an exchange with the USFS, there might be a potential for impact on the community. Refer to Section 3.2.12.2.6 above for a discussion of potential socioeconomic impacts resulting from this land exchange.

Since the area surrounding the proposed War Fork and Steer Fork, 2.2 mgd project site is relatively unpopulated, minimal disruption of local community activity during construction may be anticipated. As mentioned in Section 3.2.12.2, Environmental Consequences, of the DEIS, impacts on services and infrastructure at the sites would be insignificant. As with any large-scale resource development project, the most significant impact of the proposed dam and reservoir at the War Fork and Steer Fork, 2.2 mgd site would be associated with the potential alteration of the local setting and the loss of any associated resources or current uses of the site.

3.2.12.2.8 Wood Creek Lake Pipeline

Construction of the Wood Creek Lake pipeline can be expected to have an insignificant effect on the regional economy. A small number of jobs, less than the number projected for any of the dam and reservoir alternatives, would be created by construction of the pipeline. It is reasonable to assume that the regional economy would provide the labor and management for the project, as well as the bulk of the project materials. However, due to the very small number of jobs created by the construction of this pipeline, little to no impact on employment within Jackson or Laurel Counties is expected to result from this action. Spending by construction workers associated with the project would be an insignificant increase to the economy. Per capita income for Jackson County and the region would not significantly increase as a result of the Wood Creek

Lake Pipeline alternative. These impacts would be independent of the capacity of the pipeline constructed (1.33 mgd verses 2.19 mgd) under this alternative.

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The Wood Creek Lake Pipeline alternative would result in a moderately significant, adverse impact on water user rates, regardless of the capacity of the pipeline constructed. However, construction of the larger capacity pipeline would result in higher water user rates than the smaller capacity pipeline.

Over the long term, the Wood Creek Lake pipeline alternative would likely lead to a moderately significant amount of increased business development in Jackson County induced by the availability of a greater quantity of potable water, and a relatively insignificant increase in the Jackson County tax base from expanded industrial and commercial development in the County.

Over the long run, one potential socioeconomic effect specific to this alternative would be the long-term opportunity cost of removing up to 2.2 mgd of water from Wood Creek Lake. The sustainable yield of Wood Creek Lake does, in fact, allow for considerable expansion of water withdrawals over present levels of withdrawal. If guaranteed by long-term contract, the transfer of sizeable volumes of water to Jackson County from Laurel County may facilitate further growth and development opportunities in Jackson County at the expense of Laurel County at some point in the future, probably beyond the 50-year period of analysis of this EIS. Depending on the point of view of the observer, this could be seen as a beneficial, neutral, or adverse impact. In addition, if the transfer of water to Jackson County were not protected by long-term agreements, the County could face an insecure water supply situation in the future.

A Wood Creek Lake pipeline would avoid several of the adverse socioeconomic effects associated with certain of the reservoir alternatives. Most importantly, it would avoid disruption of the community structure and social relations due to the relocation of residents from the project area, as would occur under the two Sturgeon Creek reservoir alternatives discussed in the DEIS.

One additional moderately significant, adverse socioeconomic impact which may result from the Wood Creek Lake pipeline alternative would be the potential for disrupting the social morale of the County and possible impediment of other Empowerment Zone goals. For 15 years, Jackson County residents have rallied behind the effort to develop a lake within the County. The proposed reservoir is viewed by many residents of Jackson County as central to "empowering" the citizenry of the County, as well as to providing improved opportunity within the County (JCEZ and JCWA, 2000). The proposed reservoir was incorporated into the application for Empowerment Zone status to the Federal government, and became a key part of the strategic plan for development in Jackson County. Thus, constructing a pipeline to an existing source of surface water outside Jackson County, instead of constructing a reservoir within the County, may be viewed as a setback by many of its residents.

3.2.12.2.9 Lock 14 Pipeline

The potential socioeconomic impacts resulting from construction and operation of a pipeline from Lock 14 of the Kentucky River are the same as those discussed for the Wood Creek Lake pipeline alternative. Refer to Section 3.2.12.2.8 above for this discussion.

Table 3.2.12-1 above presents the anticipated increase in residential water user rates that would result from this alternative. The Lock 14 pipeline alternative would result in a moderately significant, adverse impact on water user rates, regardless of the capacity of the pipeline constructed. However, construction of the larger capacity pipeline would result in higher water user rates than the smaller capacity pipeline.

3.2.12.2.10 Summary of Impacts

The following table lists the potential impacts on socioeconomics resulting from the additional alternatives investigated in this FEIS.

Table 3.2.12-2. Summary of Impacts on Socioeconomics From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Increased income and employment during construction or as a result of increased development potential associated with the completed project; • Physically alter the community from changes in land use and demographics due to the project; • Change in the character of the community adjacent to the proposed reservoir; • Removal of private land from the County tax base; • Increase in property assessments on new lakefront land; • Increase in County tax base from increased industrial and commercial development; • Increased business development induced by the proposed reservoir; • Change in property values in vicinity of the proposed reservoir; • Increased need for community services to support increased population growth and business activity; and • Increased residential water use rates.	• Insignificant • Insignificant • Insignificant • Insignificant • Moderately Significant • Insignificant • Moderately Significant • Moderately Significant • Insignificant • Moderately Significant
War Fork and Steer Fork, 2.2 mgd	• Increased income and employment during construction or as a result of increased development potential associated with the	• Insignificant

	completed project; • Physically alter the community from changes in land use and demographics due to the project; • Change in the character of the community adjacent to the proposed reservoir; • Removal of private land from the County tax base; • Increase in property assessments on new lakefront land; • Increase in County tax base from increased industrial and commercial development; • Increased business development induced by the proposed reservoir; • Change in property values in vicinity of the proposed reservoir; • Increased need for community services to support increased population growth and business activity; and • Increased residential water use rates.	• Insignificant • Insignificant • Insignificant • Moderately Significant • Insignificant • Moderately Significant • Moderately Significant • Insignificant • Moderately Significant
Wood Creek Lake Pipeline	• Increased income and employment during construction or as a result of increased development potential associated with the completed project; • Physically alter the community from changes in land use and demographics due to the project; • Removal of private land from the County tax base; • Increase in County tax base from increased industrial and commercial development; • Increased business development induced by the availability of additional water supplies; • Increased need for community services to support increased population growth and business activity; • Increased residential water use rates; and • Disrupt social relations and/or impede other development goals of the EZ/EC from not creating a reservoir.	• Insignificant • Insignificant • Insignificant • Insignificant • Moderately Significant • Insignificant • Moderately Significant • Moderately Significant
Lock 14 Pipeline	• Increased income and employment during construction or as a result of increased development potential associated with the completed project; • Physically alter the community from changes in	• Insignificant • Insignificant

	land use and demographics due to the project; • Removal of private land from the County tax base; • Increase in County tax base from increased industrial and commercial development; • Increased business development induced by the availability of additional water supplies; • Increased need for community services to support increased population growth and business activity; • Increased residential water use rates; and • Disrupt social relations and/or impede other development goals of the EZ/EC from not creating a reservoir.	• Insignificant • Insignificant • Moderately Significant • Insignificant • Moderately Significant • Moderately Significant

3.2.12.3 Mitigation

There are no changes to this section for the FEIS. Refer to Section 3.2.12.3, Mitigation, of the DEIS for a discussion of measures which could minimize potential adverse impacts on socioeconomics resulting from the proposed action.

3.2.13 ENVIRONMENTAL JUSTICE

A description of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, is provided in Section 3.2.13, Environmental Justice, of the DEIS. Also provided in this Section is a description of Jackson County's population by race/nationality and income level.

There are no changes to the discussion of impacts on environmental justice presented for the alternatives discussed in the DEIS.

As in Section 3.2.13, Environmental Justice, of the DEIS, the study team considered whether there would be adverse environmental impacts that would be imposed on minority or low-income groups present in the project areas to a disproportionately greater extent than on other groups. Adverse impacts that would result from the proposed action are as discussed in Sections 3.2.1 through 3.2.12, and Section 3.2.14 of the DEIS and this FEIS. Due to the very low percentage of minorities compared to the total population in Jackson County, these adverse impacts would not disproportionately affect residents based on race or national origin.

No residential relocations would be necessary for any of the additional alternatives investigated in this FEIS. As discussed in detail in Section 3.2.12 of the DEIS, this project is expected to have a significant beneficial economic impact on Jackson County, and potentially on the surrounding region.

Based on a review of relevant data to date, none of the proposed alternatives would result in environmental health or safety risks that would disproportionately affect children. Safety measures, discussed in Section 3.2.11.2 of the DEIS and this FEIS, would prevent children from entering any of the construction sites.

3.2.13.1 No Action

There are no changes to this section for the FEIS. Please refer to Section 3.2.13.1, No Action, of the DEIS for a discussion of the impacts of this alternative.

3.2.13.2 Summary of Impacts

There are no changes to the impact ratings of the alternatives evaluated in the DEIS. Please refer to Section 3.2.13.2, Summary of Impacts, and Table 3.2.13-2, Summary of Impacts on Environmental Justice, of the DEIS.

The following tables lists the potential impacts on environmental justice resulting from the additional alternatives investigated in this FEIS.

Table 3.2.13-2. Summary of Impacts on Environmental Justice From Reassessed Alternatives		
Alternative	**Impact**	**Rating of Impact**
War Fork and Steer Fork, 1.3 mgd	• Disproportionately affect minority or low-income groups from adverse impacts associated with the proposed action; and • Benefit residents by improving health and economic conditions.	• Insignificant • Very Significant
War Fork and Steer Fork, 2.2 mgd	• Disproportionately affect minority or low-income groups from adverse impacts associated with the proposed action; and • Benefit residents by improving health and economic conditions.	• Insignificant • Very Significant
Wood Creek Lake Pipeline	• Disproportionately affect minority or low-income groups from adverse impacts associated with the proposed action; and • Benefit residents by improving health and economic conditions.	• Insignificant • Very Significant
Lock 14 Pipeline	• Disproportionately affect minority or low-income groups from adverse impacts associated with the proposed action; and • Benefit residents by improving health and economic conditions.	• Insignificant • Very Significant

3.2.13.3 Mitigation

Since no significant adverse impacts on Environmental Justice are anticipated to result from the proposed action, no mitigation measures are proposed.

3.2.14 AESTHETICS

3.2.14.1 Affected Environment

The evaluation of aesthetics, or visual quality, includes consideration of the physical appearance of a given area and the potential viewers of that area. Since the physical appearance of an area is specific to that area, the affected environment, as it relates to aesthetics, is discussed in Sections 3.2.14.1.1 through 3.2.14.1.7 on a site-specific basis.

Raw Water Transmission Main

All proposed routes for the water transmission main leading either from the proposed reservoir or from an existing source of surface water would primarily follow alongside existing roadways in the Kentucky Department of Transportation (KDOT) or County rights-of-way (ROW). The water transmission main would mainly run underground alongside these roadways.

3.2.14.1.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.14.1.1, War Fork and Steer Fork, of the DEIS for a discussion of the affected environment for this alternative.

3.2.14.1.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.14.1.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.14.1.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.14.1.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the affected environment for this alternative.

3.2.14.1.4 War Fork and Steer Fork, 1.3 mgd

Dam and Reservoir

The War Fork and Steer Fork project site lies at the edge of the Daniel Boone National Forest (DBNF), and the proposed dam site and most of the proposed reservoir area is on U.S. Forest Service (USFS) land. Nearly all of the approximately 65 acres up to normal pool level of the proposed reservoir at this site are currently managed by the USFS. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 215 acres of land. Of these 215 acres, 192 acres are currently managed by the USFS; the remaining 23 acres are privately-owned (Kenvirons, 2000b).

The area around the proposed War Fork and Steer Fork, 1.3 mgd reservoir is rolling terrain with narrow valleys and ridgetops and steep hillsides. The area is primarily forested, with a mixture of deciduous and coniferous trees. Some adjacent ridgetops are cleared and used for agricultural purposes. The Turkey Foot Campground exists approximately 0.5 air miles downstream of the proposed War Fork and Steer Fork, 1.3 mgd dam site. The area of the proposed reservoir has few viewers, but users of the Turkey Foot Campground and Turkey Foot Road view the area just downstream of the proposed dam site.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would run northeast alongside F.S. Road 3109 to Turkey Foot Road East, then would follow KY 587 South to Privett Road. The main would run southwest alongside Privett Road to KY 1071, continuing in the southwestern direction to Peters Road South. From this road, the transmission main would feed into an unnamed tributary of Flat Lick Creek, which supplies Tyner Lake with water (Kenvirons, 1999d). The primary viewers along this route are those people traveling on the affected roads and residents living along these roads. ROW along F.S. Road 3109 and Turkey Foot Road for construction and operation of the raw water transmission main leading from the proposed War Fork and Steer Fork, 1.3 mgd reservoir would be required in the form of an SUP from the USFS. In addition, for the portion of the proposed water main route that would not travel alongside existing roadways, ROW easements would likely need to be obtained from adjoining private landowners.

3.2.14.1.5 War Fork and Steer Fork, 2.2 mgd

Dam and Reservoir

The War Fork and Steer Fork project site lies at the edge of the DBNF, and the proposed dam site and most of the proposed reservoir area is on USFS land. Nearly all of the approximately 88 acres up to normal pool level of the proposed reservoir at this site are currently managed by the USFS. A very small amount of land within the boundaries of the normal pool level of the proposed reservoir may be privately-owned. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 275 acres of land. Of these 275 acres, 244 acres are currently managed by the USFS; the remaining 31 acres are privately-owned (Kenvirons, 2000b).

Since the boundaries of the proposed War Fork and Steer Fork, 1.3 mgd project site lie entirely within those of the proposed War Fork and Steer Fork, 2.2 mgd project site, the area surrounding these sites would be the same. Refer to Section 3.2.14.1.4 above for a description of the surrounding area.

The Turkey Foot Campground exists approximately 0.5 air miles downstream of the proposed War Fork and Steer Fork, 2.2 mgd dam site. The area of the proposed reservoir has few viewers, but users of the Turkey Foot Campground and Turkey Foot Road view the area just downstream of the proposed dam site.

Raw Water Transmission Main

The raw water transmission main leading from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would follow the same route as that from the War Fork and Steer Fork, 1.3 mgd reservoir discussed in Section 3.2.14.1.4 above. The primary viewers along this route are those people traveling on the affected roads and residents living along these roads.

3.2.14.1.6 Wood Creek Lake Pipeline

The Wood Creek Lake water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main on Filter Plant Road, just east of Wood Creek Lake. The entire length of the pipeline would follow alongside existing roadways in the KDOT or County ROW. The transmission pipeline would continue northeast on Filter Plant Road, turning southeast alongside US 25. The pipeline would follow alongside US 25 to Dean Hundley Road. The transmission main would run northeast alongside Dean Hundley Road to Hurley Road. The main would continue northeast on Hurley Road to KY 490, following KY 490 north to KY 30. The transmission main would run northeast alongside KY 30 to US 421, where it would veer north and connect to the existing JCWA 10-inch transmission main. The primary viewers along this route are those people traveling on the affected roads and residents living along these roads.

3.2.14.1.7 Lock 14 Pipeline

Under this alternative, the raw water transmission main would be constructed from Lock 14 of the Kentucky River near Heidelberg to the JCWA Treatment Plant. From Lock 14 at Heidelberg, the transmission main would run south alongside KY 399 to Sturgeon Creek Road. The main would then run westward alongside Sturgeon Creek Road, veering south alongside Hale Ridge-Arvel Road. The transmission main would run westward alongside Hale Ridge-Arvel Road to KY 587. The pipeline would run southward along KY 587 until Privett Road. The main would run south alongside Privett Road to KY 1071, continuing in a southwestern direction. From this point, the water transmission main could take one of two routes. One route would be to continue southwest on KY 1071 to US 421, where it would travel southeast to the JCWA Treatment Plant. Another option for the route of this main would be to veer off KY 1071 alongside Peters Road, traveling south-southeast on Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). The primary viewers along this route are those people traveling on the affected roads and residents living along these roads.

3.2.14.2 Environmental Consequences

No changes have been made to the list of potential impacts on aesthetics resulting from each of the alternatives for the FEIS. Please refer to Section 3.2.14.2, Environmental Consequences, of the DEIS for this list.

There are no changes to this section for the FEIS. Refer to Section 3.2.14.2, Environmental Consequences, of the DEIS for a discussion of the potential impacts on aesthetics that are common to all dam and reservoir alternatives, and to all proposed routes of the raw water transmission main.

As in the DEIS, potential impacts on aesthetics were determined through evaluation of the appearance of the area surrounding the proposed project sites, though determination of the area's potential viewers, and through consideration of the types of activities that would occur under the proposed action, duration of these activities, and the sizes of the affected areas.

3.2.14.2.1 War Fork and Steer Fork

There are no changes to this section for the FEIS. Refer to Section 3.2.14.2.1, War Fork and Steer Fork, of the DEIS for a discussion of the potential impacts on aesthetics resulting from this alternative.

3.2.14.2.2 Sturgeon Creek, 8.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.14.2.2, Sturgeon Creek, 8.5 mgd, of the DEIS for a discussion of the potential impacts on aesthetics resulting from this alternative.

3.2.14.2.3 Sturgeon Creek, 3.5 mgd

There are no changes to this section for the FEIS. Refer to Section 3.2.14.2.3, Sturgeon Creek, 3.5 mgd, of the DEIS for a discussion of the potential impacts on aesthetics resulting from this alternative.

3.2.14.2.4 No Action

There are no changes to this section for the FEIS. Please refer to Section 3.2.14.2.4, No Action, of the DEIS for a discussion of the potential impacts on aesthetics resulting from this alternative.

3.2.14.2.5 Summary of Impacts

There are no changes to this section for the FEIS. Please refer to Section 3.2.14.2.5, Summary of Impacts, and Table 3.2.14-1, Summary of Impacts on Aesthetics, of the DEIS.

3.2.14.2.6 War Fork and Steer Fork, 1.3 mgd

The proposed dam at the War Fork and Steer Fork, 1.3 mgd site would be approximately 61 feet tall (Kenvirons, 2000b). A dam at the proposed War Fork and Steer Fork, 1.3 mgd site may be visible to users of Turkey Foot Road and Turkey Foot Campground, especially at the entrance to the campground. The dam would probably not be visible from the campground itself. The

proposed dam would be located about 0.25 miles upstream from Turkey Foot Road, and therefore, would not be dominant in the landscape to users of this road.

During the approximately 1.5-year construction period, the construction areas for the proposed dam and associated facilities would be dominant in the landscape for local viewers. The impact of these activities on aesthetics would be very significant. After construction, the dam and associated facilities at the War Fork and Steer Fork, 1.3 mgd site would attract some attention, but not be dominant for local viewers for the lifetime of the project. While the War Fork and Steer Fork, 1.3 mgd dam site lies a short distance upstream of a Wild and Scenic River Study segment, impacts on the visual quality of this segment would rated as insignificant according to the criteria outlined in Appendix C of this EIS. Topography and forest cover would largely block the view of the dam upstream, even from the nearest part of the Study River segment. The completed dam would be out of sight of virtually the entire Study River segment.

The proposed reservoir at the War Fork and Steer Fork, 1.3 mgd site would mostly be surrounded by forested USFS property, and as such, would not be visible to many viewers. However, some hilltop adjacent to this site is privately-owned and cleared, but is agricultural and has few users. For these few viewers, the proposed reservoir would be dominant over the lifetime of the project, resulting in a moderately significant, but positive, impact on the visual quality of the area.

3.2.14.2.7 War Fork and Steer Fork, 2.2 mgd

The proposed dam at the War Fork and Steer Fork, 2.2 mgd site would be approximately 75 feet tall (Kenvirons, 2000b). The dam at the proposed War Fork and Steer Fork, 2.2 mgd site would be situated in the same location, and therefore, would be visible to the same viewers, as the dam at the War Fork and Steer Fork, 1.3 mgd site. Therefore, the impacts on visual quality resulting from construction and operation of War Fork and Steer Fork, 2.2 mgd alternative would be the same as those discussed in Section 3.2.14.2.6 above. Although the dam at this site, and thus, the resulting reservoir, would be somewhat larger than that at the War Fork and Steer Fork, 1.3 mgd site, this slight difference in size would have a negligible effect on visual quality impacts.

3.2.14.2.8 Wood Creek Lake Pipeline

As the majority of the proposed route for the Wood Creek Lake water transmission pipeline would follow alongside existing roadways in the ROW, and the disturbance due to construction would be short-term, the impacts on area aesthetics would be limited. The appearance of the construction equipment and activities would temporarily impair the visual quality of the area and would be visible to passersby on the affected roadways. However, the construction areas would be revegetated upon completion of construction. Although the visual quality of the area would remain somewhat lower until the vegetation matured to pre-construction conditions, this impact would be minimal due to the pre-disturbed nature of the roadside and ROW. Therefore, the proposed water transmission main would have neither permanent nor significant impacts on the visual quality of the area. Impacts on visual quality would be independent of the capacity, 1.3 mgd or 2.2 mgd, of the pipeline chosen for this alternative.

3.2.14.2.9 Lock 14 Pipeline

Potential impacts on visual quality resulting from the construction of a pipeline from Lock 14 of the Kentucky River would be the largely same as those discussed in Section 3.2.14.2.8, Wood Creek Lake Pipeline, above. Impacts would be independent of the capacity, 1.3 mgd or 2.2 mgd, of the pipeline chosen for this alternative.

As noted in Section 3.2.14.1.7, one of the options for the last stretch of the Lock 14 transmission pipeline route would be to veer off KY 1071 alongside Peters Road for approximately 3,000 feet, then traveling cross-country to the JCWA Treatment Plant (Kenvirons, 2000c). Construction over this cross-country segment could be dominant for local viewers, particularly nearby residents. However, as construction would last only a short amount of time, impacts from construction of this pipeline in this area would be temporary. If clearing is necessary for construction of this pipeline over the cross-country segment, impacts on the visual quality of the area would be longer-term, and would last until the area is returned to a fully vegetated state. Should this cleared portion need to be maintained for access to the pipeline for maintenance purposes, impacts on visual quality would last the duration of the useful life of the pipeline.

3.2.14.2.10 Summary of Impacts

The following table lists the potential impacts on aesthetics resulting from the additional alternatives investigated in this FEIS.

Table 3.2.14-2. Summary of Impacts on Aesthetics From Reassessed Alternatives

Alternative	Impacts	Rating of Impacts
War Fork and Steer Fork, 1.3 mgd	• Temporarily degrade the visual quality of the area during construction; • Affect visual quality over project lifetime due to the appearance of the dam; and • Positively affect visual quality due to the appearance of the reservoir.	• Very Significant • Moderately Significant • Moderately Significant
War Fork and Steer Fork, 2.2 mgd	• Temporarily degrade the visual quality of the area during construction; • Affect visual quality over project lifetime due to the appearance of the dam; and • Positively affect visual quality due to the appearance of the reservoir.	• Very Significant • Moderately Significant • Moderately Significant
Wood Creek Lake Pipeline	• Temporarily degrade the visual quality of the area during construction; and • Affect visual quality over project lifetime.	• Moderately Significant • Insignificant
Lock 14 Pipeline	• Temporarily degrade the visual quality of the area during construction; and • Affect visual quality over project lifetime.	• Moderately Significant • Insignificant

3.2.14.3 Mitigation

There are no changes to this section for the FEIS. Please refer to Section 3.2.14.3, Mitigation, for a discussion of mitigation measures, which would reduce adverse impacts on visual quality resulting from the project.